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CLOSED ANAESTHESIA*

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Closed anaesthesia has lately been attracting considerable attention, and investigation shows that many workers have interested themselves in this method during the last few years. The present discussion of this method is entirely due to the thought and experiment of these workers, not all of whom have published their views and results. It may be as well first to state what is meant by the term "closed anaesthesia," for, as it stands, it does not convey very much in the way of definition or of special meaning. Most anaesthetists are accustomed to conduct general anaesthesias which cannot be described otherwise than as "closed," so that some definition of the term is required to indicate the special light in which this form of anaesthesia has now come to be regarded.

Closed anaesthesia is general inhalational anaesthesia maintained indefinitely by the continuous rebreathing of a relatively small fixed amount of anaesthetic gas, which is constantly kept in a respirable and life-supporting condition. This definition implies some special treatment of the gases in the closed system by which the anaesthetic gas is recovered in a state of purity for reinhalation. The closed system may also be called the "recovery principle," which term conveys the additional fact that the anaesthetic gas is recovered from the breath, is used over and over again by the patient, and is not allowed to escape into the general atmosphere during the anaesthesia.

Gas-recovery is not new, the absorption of carbon dioxide from the breath being well known as a method employed in physiological research, as also is the fact of the chemical stability of the anaesthetic gases. It is not remarkable, therefore, that the idea of applying these facts to the management of gaseous anaesthesia should have occurred to many workers both at home and abroad. What does seem strange, however, is that the principle of carbon dioxide absorption, which seems so simple and effective, has not produced more decided results and established itself as a workable and reliable method.

The idea presented itself to me originally less as a method of using the anaesthetic gases with improved effect than as a means of making gas-oxygen apparatus portable. The construction of apparatus of manageable weight had interested me for several years, but there seemed to be no means by which cylinder dead weight might be reduced until the recovery principle was thought of and tried. With this scheme working successfully, it should be possible to make a really portable apparatus, since it would no longer be necessary to carry about the large supplies of gases required by the "flow" principles. There might also be other advantages from the working of a completely closed system.

* Read in opening a discussion in the Section of Anaesthetics at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

Mechanical Difficulties of Administration

At the outset it was seen that there would be no great difficulty in making a machine that would be gastight, but would it be possible to get the necessary security of joint between the machine and the patient? This was a matter of great importance, for, if leakage could not be controlled, the system could not be kept completely closed, which is a condition demanded by the recovery principle. On reviewing the various instruments which have been described, I cannot help thinking that this joint between the machine and the patient has proved a great difficulty, and, from my experience in dealing with it, there seems to be little doubt but that this detail has held up the development of this method from the beginning.

A very early conclusion reached by me was that the joint could not be maintained for the purposes of the principle by any means applied to the face. A mask might be necessary for induction, but other means would have to be used to maintain the closure of the system upon which the recovery principle depended.

Gas Supply Connected Directly with Pharynx

The obvious solution to this problem appeared to be the fitting of some tubular device into the pharynx immediately behind the tongue, the tube having an inflatable cuff or tyre at its free end for making contact with the pharyngeal wall upon distension. Experiment at once showed this to be quite feasible.

It was found that such a device, when made to correspond with the general configuration of the throat, filled the cavity completely, and, by being made to expand laterally, did not open the oesophagus as might be expected. When connected with the instrument this gas-tight joint was capable of withstanding all the higher pressures used, even up to 30 mm. Hg without leakage. This throat tube therefore provided the means for joining up the patient with the machine, and so fulfilled the condition of complete closure.

An outstanding difficulty in connexion with the making of this tube was to find the rubber which, in a tyre of the small size required, would stand the inflation often needed for capacious throats. Elasticity of rubber is apt to be variable, with the result that a weak spot may develop with use, and soon rupture. This difficulty threatened failure for a considerable time, but ultimately a suitable rubber was found, which was more than equal to the conditions imposed upon this small tyre, and the tube is now manufactured successfully by the India Tyre and Rubber Company of Inchinnan. The rubber used is

remarkably durable, and is capable of doing many dozens of cases; in fact, I have not yet reached the limit of durability of a single tube which is used for almost every one of my cases, and which is boiled after each occasion. This property of sterilization by boiling is unique for rubber, and of the utmost importance in the use of such an instrument.

Absorption of the Carbon Dioxide

Another matter requiring consideration was the most suitable method of absorbing the carbon dioxide. Generally speaking, there are two methods in use: (1) the granular or dry method, using a soda-lime compound, which operates most successfully as an absorbent in the various kinds of respirator, particularly those which have to be carried about on the person; and (2) absorption by means of a strong solution of caustic soda or potash. The latter method is impossible for use for most purposes, yet the special conditions of general anaesthesia make it the most suitable.

The solution is undisturbed during use, so that there is no danger of its escaping into different parts of the tubular system, and its avidity for carbon dioxide is high and very constant at all rates of breathing. It is also possible to apply a simple test to the solution to ascertain the need or otherwise for renewing it. This latter is a point of importance, particularly in hospital practice, where an anaesthetist may wish to use a machine, the absorbing capacity of which may be quite unknown to him. This estimation is a very uncertain matter with even the coloured granular absorbents when used occasionally as is the case with anaesthetic apparatus, and their use entails considerable waste under these circumstances.

Simple Method of Estimating Limit of Absorption

The devising of a suitable test for the limit of absorption of the liquid gave some concern, for the usual double titration method of estimating the increasing percentage of carbonate as it formed was quite unmanageable by the anaesthetist who wanted to use the machine without delay. The method also failed to operate after a little over 16 per cent. of carbonate was formed, for in the cold solution crystallization took up the excess over this figure. For the purposes of the anaesthetist it was necessary that a result be quickly arrived at by simply adding a sample of the absorbent to an indicating reagent of some kind. This was finally achieved by modifying the double titration method, and the test now consists of adding 1 c.cm. of absorbent to 1 c.cm. of 80 per cent. hydrochloric acid in water, using two drops of phenolphthalein as indicator. If the purple colour remains the solution may be used for at least two hours. If the colour is discharged the solution should be changed, although it is not actually exhausted.

This point of discharge was fixed arbitrarily by ascertaining when the absorbing solution allowed 3 per cent. of carbon dioxide to remain unabsorbed from exhaustion of the soda, and, considered along with the lowered metabolic activity of the average case during an anaesthesia, it provided a good margin against the point being overreached. The machine has also another means of dealing with such possible oversight. As the unabsorbed carbon dioxide accumulates along with the other gases the pressure in the system rises, and relief is given by the blow-off valve.

A Machine for Administering Closed Anaesthesia

A machine constructed according to the foregoing principles is exhibited here and known as "anaesthetor M 7." It represents the results to date of my investigations into the recovery or closed method of using the anaesthetic gases. It consists of a basal part, which is the absorbing tank, on the removable lid of which are mounted the tubular and valve parts, sight-feeds, etc. In front are the two turret valves which interrupt the metal part of the respiratory tube for the purpose of diverting the breath through the ether chamber, absorbing tank, or both, or of directing it straight through to the breathing bag at the extreme left end of the tube. At this point also are seen the blow-off valve, which consists of a spring-loaded ball capable of adjustment, and also the nitrous oxide inlet. Behind are the sight-feeds for the anaesthetic gas and the oxygen; these are of simple design, for in the closed system there is no measuring or proportioning of the gases, since they do not flow as in the other methods. The stable nitrous oxide is an atmosphere like the nitrogen of the air, and is therefore absolute; oxygen is merely added to the requirements of the patient as these vary. The other fittings are, the ports to the ether chamber and the absorbing tank placed at either corner behind, and the level and levelling screws seen in front.

The lid is removable from the absorbing tank by undoing the six straining clips, and, when removed, reveals the shallow ether chamber and the baffle, which is fixed to its underside, and surrounded by four limiting walls. The baffle divides this box-like space equally but irregularly into two parts, each of which communicates with one of the two passages seen to lead up to the turret valve above. The free edge of this baffle is deeply serrated throughout its length by triangular serrations. These, along with the surface of the solution into which they dip almost entirely, constitute a device whereby a series of apertures is formed through which the breath has to pass as it moves through the machine. These triangular apertures vary in their size with the volume and the strength of the breath passing through them, and, being open below, cannot become occluded with crystals of carbonate as happens with round holes. It is the need for the even dipping of this baffle into the solution that necessitates the use of the level and levelling screws.

The absorbing tank works with one litre of solution, which may be made up in the tank by dissolving the contents of a 1 lb. tin of caustic soda in a sufficiency of water, and, when cool, filling up with water to the line marked on the inside. The baffle is arranged to work *only* with this amount, as it ensures effective absorption with the lowest resistance to the breathing. This quantity of solution keeps the unabsorbed carbon dioxide down to 1.5 per cent. for about eight hours, after which it slowly rises until the test gives indication that the 3 per cent. point is passed. Ten anaesthetic hours represents the usual range of absorption of this amount of solution.

The apparatus is connected with the patient by the corrugated rubber tube, which ends in a swivel-valved joint. To the rotating part of this joint can be attached a mask for induction purposes at one point, and the throat tube for the maintenance of the anaesthesia at the other, with, of course, provision for breathing to the air. Attached to a small nipple on the inside of this valved joint is the delivery tube from the oxygen sight-feed, which is seen to enter the side of the respirator tube. By this means oxygen is supplied directly to the mouth of the patient. A mouth prop of oval tubular pattern keeps the mouth open during induction for the passage of the throat tube at the proper time. This prop is held in place by the sponge rubber covering of the mask, so that it cannot be ejected by the patient as he "goes under." The throat tube is in two parts: a rustless steel oval wire coil fixed to a coupling, and a rubber tubular covering which is pulled over the coil and also fixed to the coupling by a rubber ring. The free end of the rubber tube shows the tyre from which the small inflating tube passes along one side to end in the strong pressure tube, to which the inflating bulb is attached when in use.

The Machine in Use

From what has already been said certain preliminaries are essential before attempting to use the machine. In the first place, the absorbent must be tested unless it is known that this is unnecessary: ether should show on the indicator seen through the glass top of the filler cap, and the gaseous supplies must be adequate and under complete control. When placed beside the operating table the instrument must be levelled by using the screws at each corner in front. A bagful of gas may now be admitted, and then forced through the absorbing tank by hand pressure to remove as much of the air as possible, and also any ether that may have been left from the previous case. The swivel valve at the end of the respirator tube allows of this "washing through" when set to either extreme position, but when set to "air" the machine is closed, and may now be filled with gas ready for use.

With the mouth prop in position, induction is effected with the mask. Breathing on "valves" is secured by having the absorber "on"; the small resistance so set up to expiration causes the breath to escape through an expiratory valve on the mask. Closing this valve stops the process. When induction is completed, with the use of a trace of ether when required, the throat tube, previously assembled, is fitted to the swivel valve, and, at a suitable moment, is swung round and inserted into the throat, where the small tyre completes the joint on being inflated. After this the nitrous oxide will be turned off unless raised pressure is required; the oxygen will be regulated to suit the requirements of the patient, and ether used to suit those of the surgeon; and in the average case the absorber will be turned "on."

When anaesthesia is established the first point to require attention will be the throat tube. It is necessary that the tyre be not over-distended, and to avoid this one finds the lowest sealing pressure. In one case over-distension which inadvertently occurred, and was allowed to continue, resulted in some pharyngitis, which, however, soon passed off, but the experience provided the lesson in its avoidance. The lowest sealing pressure is easily found by deflating the tyre until breath is heard to escape in the throat, when one pressure of the bulb will close the joint. The joint may be tested in this way once or twice during a lengthy anaesthesia; the muscles of the pharynx tend to relax as time goes on, and to accommodate themselves to the tyre more readily, so that, combined with lower pressure in the instrument, less distension is required in the tyre. Attention of this kind ensures the complete absence of pharyngeal irritation, even after prolonged anaesthesia. A special soapy lubricant made by Allen and Hanburys facilitates the insertion of this tube, but no oily or greasy matter should ever be used, as these substances attack the rubber very quickly.

When the closed system has been established and the patient is breathing quite clearly, relaxation—for example, of the abdominal muscles—will call for the use of ether. Along with this the pressure of the gases should be raised by admitting nitrous oxide up to pressure indication. This pressure may be as great as 20 mm. Hg, or even more in the case of a very strong man suffering from an acute upper abdominal lesion. Pressure greater than this usually stops breathing, however, especially as the ether takes rapid effect, and embarrassment to the breathing must be removed by lowering the pressure. With the production of relaxation the ether is discontinued, and the pressure maintained at about 10 mm. If further effect is required, say, to close the abdomen, it is better to add a little more ether than to use raised pressure again.

The further use of much ether or pressure is rarely called for owing to a peculiarity of the closed system. The ether that has been added to it in the early stages of an operation mostly remains in it, except for a little that is absorbed into the tissues. In many cases the ether tension in the patient's circulation and in the machine would appear to become stabilized and to remain uniform. The patient's vitality in these cases does not remain constant but diminishes, and in so doing makes him more susceptible to the etherized atmosphere. Relatively to the patient, therefore, the original effective dose of ether now becomes an overdose, as shown by the depressed breathing with inspiratory tugging of the chin and the dilating pupils.

This situation, so easily seen developing in such cases, is as easily dealt with and corrected. The breathing bag is emptied by hand pressure through the blow-off valve, and filled with fresh gas. Ether is exhaled into this gas, which may be renewed once or twice more at four- or five-minute intervals. Normal conditions are soon re-established, and a more definite gas-oxygen anaesthesia supervenes until the end of the operation.

This relative overdosage makes its appearance slowly, as a rule, and some time after the ether has been turned off. It seems to occur in patients of the nervous type, whose reserves of nerve energy are not great. In the stolid types of patient the ether used is absorbed to a much greater degree, so that light anaesthesia tends to supervene, with its vigorous breathing and smallish pupils. This lightness of anaesthesia may also be detected by turning on the ether full for one breath or so, when its irritating effect on the larynx produces a kind of grunting on expiration. A few breaths of ether stop this noise, and restore the deeper state of anaesthesia. Occasionally a patient may phonate continuously throughout a long anaesthesia, in spite of other signs of adequate depth.

In using the instrument conditions may arise in the patient which call for the closure of the absorber in order to accumulate carbon dioxide for purposes of stimulation. It is interesting to observe the restoration of blood pressure under these conditions, and the general improvement in vitality in enfeebled cases. The pressure gauge on the instrument gives a remarkable amount of information about the patient after one has become familiar with it. It indicates the fact of clear breathing by its steady movement to and fro on either side of the zero mark. When the absorber is switched on the needle vibrates at either end of its excursion, owing to the passage of the breath past the baffle. If the instrument is level, this disturbance is equal on either side. At normal pressure good breathing imparts a swing of about 10 mm. to the needle, so that one can form an idea of the respiratory vigour under most conditions. If overdose with ether begins to appear the negative side of the excursion representing inspiration will increase and be more active than the expiratory or positive excursion. This corresponds with the jerky inspiration previously referred to.

As regards metabolism, a very good relative idea as to its changes in the course of an anaesthesia is obtained from the visible amount of oxygen required to keep the complexion well coloured. Metabolism inevitably diminishes as an anaesthesia and operation proceed, and, of course, some patients show this more than others. The machine shows it through the pressure gauge. At the beginning of an operation a given supply of oxygen maintains a steady anaesthesia with steady carbon dioxide absorption, but it may be noticed after a little that the pressure of the system is gradually rising. This is due to the fact that in the closed method the oxygen supplied for metabolic purposes is not all being used up by the patient. It collects, and thereby raises the pressure of

the system. On cutting down the supply a little, the pressure returns to the previous reading. The use of ether, with depressing effect on the respiration, frequently shows this rise of pressure in the system. Finally, pressure must rise when the absorbent becomes exhausted or is put out of action for any length of time, but the ball-valve relieves this as previously explained.

Experience with the Closed System

The true criterion of the success or otherwise of any method is the general opinion based on actual experience of the use of that method. My experience of the closed system is based entirely upon the use of the instruments with which I have experimented ; it is therefore necessarily limited, and my attitude towards the system may not be quite free from bias. It is unfortunate that experimental conditions do not allow of the distribution of such instruments, even among anaesthetists, in order to get a collective opinion. On this account I have frequently felt the want of collaboration with some of my colleagues, particularly on clinical matters. However, the experience I have gained will, I think, be of interest, and may incline others to turn to this field the attention that is necessary to develop it.

My experience with this machine, and one or two of its less successful predecessors, covers about 350 cases of the usual surgical type. Owing to the convenience of " receiving nights " at hospital for trying out this machine with its innumerable alterations, a great many of the cases were the usual urgent abdominal conditions—appendix, strangulated hernia, perforation of gastric and duodenal ulcers (usually in strong men), and the other odds and ends of a receiving night theatre. The management of such cases very soon showed the capacity of the instrument for dealing with them, and also its limitations.

Positive pressure, one might imagine, would so increase the solubility of nitrous oxide in the blood that its anaesthetic effect would be correspondingly enhanced. This, however, only takes place to a limited degree, merely producing an increased steadiness of the gaseous anaesthesia. Positive pressure does not profoundly deepen the anaesthesia with gas, but let it be used with ether and the strongest man very soon succumbs to its influence. For ordinary work, however, a pressure of 10 mm. is quite sufficient, and this may need to be reduced in some cases. Positive pressure reduces the amount of ether required for muscular relaxation. With this control over ether, it will be understood that difficulty in managing any acute case such as may occur when using an open anaesthetic does not arise, and this is one of the great advantages of the closed system.

Many of the patients were seriously ill, and constituted definite risks with the usual open anaesthetic ; with this apparatus, however, they revived, or appeared to do so, on the table under the influence of their own carbon dioxide, which was collected for them by closing the absorber. The stimulated conditions so produced are apt to give a misleading idea as to the patient's true condition, but they may make a desperate operation possible, and so extend the patient's chances of recovery.

Two such cases are of interest in this respect. One was that of a man of 92 with a perforation of a large simple duodenal ulcer. Owing to contraindications to other methods, gas-oxygen was asked for. It so happened that this apparatus with its throat tube was not available at the time ; the ordinary apparatus was rendered useless owing to the patient having a profuse beard, and the usual open anaesthetic using some chloroform was resorted to finally. Everything went well with him for the first four days, when his heart began to fail. It was believed that here was a case in which this closed apparatus with its throat tube would have turned the balance towards a more successful issue. The other case was of a woman of 53, acutely ill from gangrene of part of the small gut. After a rapid anastomosis, ten feet of bowel were removed, and in spite of the usual surgical experience of this condition, the patient survived. It was believed of this case that the patient would not have survived with an open anaesthetic.

The experience of routine surgical cases covers some of considerable length ; two, each lasting two and a quarter hours, are notable. One was of a difficult gastrectomy, and the other of an extensive bone graft ; both patients did very well. Other cases were of the usual duration—for example, gastro-enterostomies, gall-bladder cases, and the various operations of the lower abdomen, including an abdomino-perineal excision of the rectum. The instrument has also been used for operations on the kidney, breast, and thyroid gland. In toxic cases of the latter reliance should not be placed entirely upon a general anaesthetic, some infiltration being desirable. Nasal operations are successfully dealt with, as the throat tube occludes the pharynx and remains out of the operator's way.

So far as one can see the effects of the method upon the patient are not markedly different from those produced by the other methods. Recovery is quiet and remarkably free from sickness, especially when nembutal is used. It is to be noticed, however, that an opiate as a preliminary drug provides calmer respiratory movements than does the barbiturate, and so may be preferred by some abdominal surgeons. An excessive dose of an opiate should be avoided, for a general anaesthetic may develop its power to a toxic degree, as shown by depressed respiration and sighing, which may last from some hours to two or three days. Such extreme medication is quite suited to the use of spinal and local anaesthetics.

The other aspect of the closed system upon which I may comment is its economics. In this field the closed system is quite supreme. The use of gas-recovery makes it possible to carry out up to thirty cases with 100 gallons of nitrous oxide, as was found when the working costs of the principle were under consideration. Oxygen, of course, is used continuously, but as none can be wasted during anaesthesia on account of the closure of the system, only the smallest amount required for the purposes of metabolism is used. Taking the above thirty cases as generally representing twenty-five hours' anaesthesia, the oxygen required for them amounted to about ten cubic feet. The ether works out at about twelve cases to the pound, but this figure must necessarily vary. The other commodity required is caustic soda. One pound lasts about ten anaesthetic hours, as compared with granular absorbents, which last about half this time.

From these facts there can be no question as to the difference between the recovery principle and the " flow " principle, and with the greater flexibility of the former as a result of the use of the throat tube, a method of using the gaseous anaesthetics is now available which it will be most advantageous to develop.

Conclusion

The advantages of the closed system may be briefly summed up. As a method of using an anaesthetic gas such as nitrous oxide there is some improvement in the steadiness of the anaesthesia, and a little more oxygen is permissible in the average case. One cannot say that the anaesthetic effect of the gas is greatly exalted, even with positive pressure. The need for ether still leaves us with the desire for a more potent gas, and in this connexion we are beginning to hear of one, cyclopropane. The employment of positive pressure is a great advantage, but its use is limited.

With the closed method less ether is required per case, since to a very great extent it is retained within the system, where it quickly becomes warmed. The use of the throat tube, while making the system workable, assures a clear and adequate airway in any position in which the patient may be placed, and also prevents saliva and other matter from reaching the lower air passages. The anaesthesia is conspicuously dry, even where atropine has been omitted and saliva has flowed profusely. The use of the tube extends the scope of surgery to the head and face, including the teeth.

The apparatus used is compact and light, easily handled, and simply constructed. There are no fine adjustments to become deranged. The working costs are the lowest possible, as consumption of anaesthetic gas is independent of the duration of the anaesthesia, being estimated at so much per case. Where working costs have to be considered, as in most hospitals, the recovery principle provides the usual gas-oxygen anaesthesia for less than the cost of open anaesthetics in cases of average duration. The necessary apparatus and supplies are easily portable.

Reviewing the position as it appears to me from a limited experience of this closed system of anaesthesia, I think we have gained access to a new field of anaesthetic administration sighted by others a long time ago. We must now set about its exploration by developing apparatus and technique, and, with the possibility of finding newer and more potent anaesthetic agents, no one can say what further advantages the closed system has to give.

X-RAY TREATMENT OF DISEASES OF THE GENITO-URINARY SYSTEM*

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The *x*-ray treatment of diseases of the genito-urinary system is a somewhat wide subject, and one that cannot be dealt with adequately in the time at my disposal. It is a little difficult to decide where to begin, but it will be well perhaps, in the first instance, to say a few words about technique.

Unit Skin Dose

There is still a good deal of controversy and confusion as to what is implied by a unit skin dose—a skin erythema dose ; the number of *r* units which represent these doses, etc., so many factors, and the grade of erythema produced varying considerably in different clinics. All this is too controversial to enter into in this short communication ; nevertheless, it is advisable for me to give some idea of what I am talking about when I refer to an erythema dose. Personally, I mean a dose which, when applied to the skin of the abdomen of an adult, produces a slight redness within three weeks after the application, followed by some bronzing or pigmentation of the skin, but no desquamation. This is at least 25 per cent. less than that often given and described by many as an erythema dose, and may perhaps be described as the mild or minimal.

After some thirty years' experience, however, I have been much impressed by the importance of preserving the integrity of the skin, and would rather limit the skin dose and increase the number of ports of entry wherever possible than run the risk of causing damage. I am well aware that this is not always possible, and there are cases where the dose mentioned may have to be exceeded, but one must be careful not to produce a cure which is worse than the disease, many such having come under my notice. I know that those who advocate a so-called epidermicidal dose say that complete repair takes place ; but is this permanent? I doubt it, as most patients so treated do not live long enough to tell the tale. There may be those here, however, who may be able to show that I am wrong.

The dose I have mentioned, if applied at a single sitting, in a certain time, at a certain distance, and at a certain kilovoltage, is a fairly definite one, and is what is implied when I refer to a unit skin dose in this paper ; if spread over several days the total exposure required to produce the same effect will be greater. Levitt has stated that a 100 per cent. dose given in one day if spread over one week would require 150 per cent., and spread over a fortnight some 220 per cent. to produce the same effect. From my own observations I would say that this is a fairly accurate estimate, and important to remember when mapping out a dose that has to be spread over an interval of time. Different diseases require different techniques in order to obtain the best results, and having decided on what is likely to be the most beneficial dose in a certain case, the next thing to consider is the best way to administer it, and we have various techniques to choose from.

* Read in opening a discussion in the Section of Radiology and Electrotherapeutics at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

Fractional Dose

This is by far the oldest method, and is still largely used, chiefly in the treatment of benign conditions. It consists in giving fractional doses of one-third to four-fifths or so of the unit skin dose at intervals of a few days, a week, or longer, and kept up, in some cases, for a considerable period of time.

Single Massive Dose

This method created a great stir when it was first introduced into this country, and some very exaggerated claims were made for it, which were not substantiated. Its aim is to apply uniformly throughout a malignant growth the largest dose which the tissues will tolerate, the whole dose being given in one day. I tried the method when it was first introduced, in a few cases of malignant prostate, but very quickly abandoned it on account of the practically constant, and often somewhat alarming, constitutional upset which resulted. It still has certain uses, as in the treatment of rodent ulcer, etc., but not, to my mind, in any disease of the genito-urinary system.

Divided or Split Dose

This is a modification of the preceding method. The dose, instead of being given in one day, is spread over an interval of time, at daily or two-day intervals, according to circumstances ; and here it must be remembered, as I have already pointed out, that the actual dose given at each exposure will depend upon the time over which the treatment is to be spread. This is the method I consider to be the most suitable in the majority of cases.

Saturation Method

The saturation method is one I have never used. Its aim is, after a maximum dose has been given, to keep up the effect by giving further daily doses of some 15 per cent. of the unit skin dose for several days.

Protracted Fractional Dose Technique (Coutard)

This method is also one of which I have no personal experience. Malignant genital tumours so treated have been reported by Schumacher, who states that although

the bladder and intestine have received as much as 2,000 to 2,500 *r* when this procedure was applied to the lower pelvis, the reaction of these organs was astonishingly little. Possibly our president, who has had some experience of this method in the treatment of cancer of the larynx, may have used it in some genito-urinary case ; if so, his experience and that of anyone here who may have tried it will be very interesting.

Various factors which influence the biological effect of a dose of *x* rays, such as the time taken, the interval between the doses, the quality of ray, etc., are still very controversial, and cannot be entered into in any detail. Generally speaking, it seems to be assumed by most radiologists at the present time that, in the treatment of malignant cases at any rate, the hardest rays possible should be employed—180 kV upwards—and the object aimed at should be to give uniformly throughout a tumour 100 per cent. of the unit skin dose without damage to the surrounding tissues. This, of course, in many situations is extremely difficult, but were it always possible I, personally, doubt if we should find that a cure could be effected—there are so many factors of which, as yet, we know nothing. I could quote quite a large number of cases of breast carcinoma in the early days of *x*-ray treatment, when a gas tube and 12-inch or 16-inch spark-coil were used, in which recurrences in the region of the scar completely cleared up. Needless to say, the kilovoltage here was nothing like 180 ; the lesions, true, were superficial, but they disappeared under this type of radiation. I am not one of those who hold that low kilovoltages should be employed in the treatment of malignant disease. Far from it, for various reasons ; but I must say that I doubt whether the quality of the ray from high kilovoltage machines is as important as the fact that with such we are able to give a more uniform depth dose.

Another curious fact I have observed on several occasions may be exemplified by quoting two similar cases of bone metastases which came under my care at the same time. In the one the lesion was attacked by giving a unit skin dose through several ports of entry in an attempt to deliver as large a dose as possible ; there was no good result—in fact, rather the opposite. In the other, only one erythema dose on the skin over the lesion was given, and the condition completely cleared up, as evidenced by *x*-ray examinations carried out before and after treatment. How are we to account for this if a 100 per cent. dose is necessary in all cases? And are we not inclined, in these days, to be too mathematical in our dosage, forgetting that the human body is a very variable factor, and that one man's food may be another man's poison? As you know, large doses of *x* rays are destructive and have an injurious effect upon the patient, the body being able to tolerate only a certain amount of what, for want of a better name, we may call the *x*-ray poison ; small doses, however, have a stimulating effect, as I shall show later. There is one thing I am certain of, and that is that whenever large doses are considered to be necessary they should be so regulated as to avoid, as far as possible, any lowering of the general resistance of the patient, since there is no doubt that many who have received too big a dose go downhill rapidly. Therefore, the ports of entry should be as small as is compatible with efficient radiation ; the shortest route to the lesion should be chosen ; the patient should be protected from scattered radiation ; and if on a trial dose there is any upset, the intervals between the doses should be increased from one to two, three, or more days, regulating the dose accordingly, rather than risk this lowering of vitality. It should never be forgotten, as Dr. Gilbert Scott has humorously remarked, that there is a patient attached to the tumour!

Diseases Treated by X Rays

So much, then, for a short survey of general principles. We will now go on to consider the various diseases treated by *x*-ray therapy, and, in the first place, the kidneys. These organs, situated as they are in the upper abdomen in close relation to the liver, spleen, suprarenal capsules, and large and small intestine, present considerable difficulties, and quite often severe constitutional disturbances are encountered. On this account no attempt should ever be made to give a single massive dose, and the effect of divided ones must be carefully watched, since practically the only conditions radiologists are called upon to treat are growths. There is no doubt that the advance of pyelography and excretion urography has enabled the diagnosis to be made much earlier, such growths as hypernephromata giving a characteristic picture. If an early diagnosis is made *x*-ray treatment should never be recommended, barring some contraindication, in place of operation ; but in advanced inoperable cases such treatment is to be recommended, for although, so far as I am aware, no cure has been reported, there have been cases where a marked reduction in the size of the growth has taken place and been maintained for some considerable time.

Growths of the Bladder

Here again operation is the procedure of choice. The only cases that have come under my care are those where diathermy or operation has failed, or where the growth is considered for some reason or other to be inoperable, and I must say that *x*-ray treatment in such cases has proved most disappointing. From the experiences published by Sir John Thomson-Walker it would appear that preoperative radiotherapy, with the idea of reducing the size of the growth, is not to be recommended, as the bladder becomes spasmodic and contracted, and the limits of the growth difficult to define. Neither is immediate post-operative treatment to be recommended when there is an open wound, on account of the risk, a very great one, of increasing urinary infection. In the case of growths unsuitable for operation, or in recurrent growths, *x*-ray treatment should be tried, and a few good results have been reported, though, as I have said, they are as a rule very disappointing. The split dose method is the one to employ, and the effect of each exposure must be carefully watched ; it is advisable, to my mind, to spread the dose over a period of ten days or a fortnight.

Simple Enlargement and Malignant Growths of the Prostate

In my experience simple enlargement of the prostate is very favourably influenced by *x*-ray treatment, but the results cannot be said to be certain or constant. In view of the fact that in skilled hands the modern operation for enlarged prostate is so successful, I would say that radiotherapy should not be recommended as against operation, unless there is some definite contraindication. Nevertheless, I know of several medical men who, when their own prostate becomes enlarged, preferred to try *x*-ray therapy rather than submit to operation, and in some cases the results have been most encouraging. One has to remember in these cases that, although the growth is non-malignant, quite a large dose is necessary, in the region of 90 per cent. of the erythema, if the best results are to be obtained. All my cases have been treated through six ports of entry—three anterior and three posterior.

In the case of the malignant prostate the operation is a very severe one, and the results not very encouraging, and in such cases *x*-ray treatment may be said to compete with surgery. The most usual result of such treatment is, I fear, a temporary improvement with some diminution in size and often reduction of the hardness.

The latter, however, is not permanent ; a relapse usually takes place quite early, but occasionally not for a year or two, or even longer ; five years is the longest in my own series. At times, however, one gets a case where the growth appears to disappear completely. In such cases the question of incorrect diagnosis always crops up, but even if the growths are non-malignant, which I doubt, then we have some further proof of the good results in simple enlargement, and the existence of such cases gives us ground for hope that with some modification in technique we may find a means of making our numerous temporary improvements permanent.

The bulk of the cases of malignant prostate which have come under my care have been treated by the six field method, sometimes supplemented by a perineal field, the dose being the erythema described on the skin of each area: size of ports, 6 × 8 cm. ; distance, 30 cm. ; kilovoltage, 180 ; filter, 1/2 mm. zinc or copper + 2 mm. aluminium—the dose being spread over ten days to a fortnight according to circumstances.

In all cases of prostatic enlargement, and the same applies to bladder growths, great care must be taken to reduce urinary infection to a minimum, and if this cannot be done I would say that *x*-ray treatment is contra-indicated. There is no doubt that urinary infection is accelerated by *x*-ray exposures, and in not a few cases a general urinary infection following *x*-ray treatment has been the cause of death. The dose I have mentioned may be repeated after an interval of from six weeks to two months, preferably the latter. It must be pointed out, however, that reaction is generally more marked when a further series of doses is given ; therefore the doses should be somewhat reduced and the results carefully watched. All patients should be kept in a nursing home or under medical supervision while the treatment is being carried out, so that any emergency arising from reaction, such as retention of urine, may be promptly dealt with.

Growths of the Testicle

Although some of these are quite radio-sensitive, they should, in my opinion be removed surgically, and *x*-ray treatment to the glands should follow. The results of such treatment are quite encouraging, and I know of one case where the glands were very definitely enlarged. This was many years ago, and the patient is still perfectly well.

Tuberculous Epididymitis

This condition responds very favourably to quite small doses of *x* rays, and one patient, treated in 1932, appears to be completely cured after four doses only of 1/2 B.S.N., 120 kV, 1 mm. aluminium filter, ten days interval between the first and second doses, and three weeks between the third and fourth.

Carcinoma of the Cervix

We will now go on to consider the *x*-ray treatment of diseases of the female genital organs, and take malignant conditions first. Of these carcinoma of the cervix is by far the most common, and is undoubtedly favourably influenced by *x*-ray treatment. In quite a fair proportion of cases the disease appears to clear up completely, but here again a recurrence sooner or later, which is much more resistant to radiation treatment, is the rule rather than the exception, though one does occasionally see patients who remain in good health for years after *x*-ray treatment alone.

A good deal of controversy still exists as to the best form of treatment. There are those who hold that in suitable cases operation in the hands of a skilled surgeon is the procedure of choice ; others hold that radium is superior to *x*-ray therapy ; while others hold that a combination of *x*-ray therapy and radium affords the best hope of success. At the moment I am against radiation treatment in any malignant condition where an operation can be efficiently carried out, but in cases where, for some reason or another, operation is contraindicated I would say that the combined *x*-ray and radium treatment offers a better prospect than either given alone. Most frequently at my own hospital radium has been applied in the first instance, and after a suitable interval the patient is sent down for *x*-ray therapy. I am of opinion that this order should be reversed, radium being applied some six weeks to two months after a thorough irradiation by *x* rays. I feel that such a procedure would reduce the number of cases in which a recurrence takes place after *x*-ray treatment alone.

Carcinoma of the Body of the Uterus

On the whole this condition is less favourably influenced by radiation treatment than cervix cases, though quite a number respond quite well. Failing operation for choice I consider that *x*-ray treatment is superior to radium, and the same applies to sarcoma. The divided dose technique is the best procedure to adopt, though I believe in cervix cases some radiologists still employ the single massive dose as originally worked out at Erlangen.

In the case of the ovary the type of growth met with is very variable, and some growths are undoubtedly radio-sensitive. Nevertheless, if the case is operable I would strongly advise surgical removal, followed by a course of *x*-ray therapy. In all inoperable cases *x*-ray treatment is indicated, and, in a few, very remarkable results have been obtained, the patients remaining well many years after. This, however, is the exception rather than the rule, and no doubt the results depend largely on the type of malignancy. It is advisable in all these cases to irradiate the whole pelvis by the divided dose technique.

Non-Malignant Conditions

We now come to certain non-malignant conditions, such as menorrhagias of the menopause, menorrhagias at other periods with no definite pathological condition of the uterus, menorrhagias associated with fibroids, and cases where, owing to dysmenorrhoea or other conditions, sterilization is considered advisable. I have put all these cases together, as the dose in each is practically the same, and may perhaps be called the sterilization dose ; it is about 35 per cent. of the erythema dose to each ovary. In this class of case *x*-ray treatment is, in my experience, most successful, and if we omit certain cases of fibroids we may claim almost 100 per cent. of cures without any undue upset.

Personally, I give a rather larger dose than that mentioned—namely, 40 per cent. through four ports of entry, one anterior and one posterior over each ovary. In very obese subjects this has, at times, been supplemented by a postero-lateral field in each side. Since, with efficient apparatus, one-third (or even more) of the dose applied to the skin reaches the ovary, it is evident that these results can be obtained without producing any skin reaction. There are two ways of carrying out this treatment: the total dose may be given at one sitting, in which case it is advisable for the patient to go into a home or to remain in bed for two or three days, or the dose may be reduced to some 25 per cent. and spread over three months at monthly intervals. This causes practically no upset whatever, and the results are excellent in both cases.

I would like to emphasize the importance of having every case thoroughly examined by a gynaecologist before commencing the treatment, and I make it a rule never to undertake a case that has not been so examined, for obvious reasons. As I stated early in this paper, small doses of *x* rays are stimulating, and this fact may be

made use of in the treatment of cases of sterility with ovarian hypoplasia, in amenorrhoea, and other minor menstrual disturbances. In a series of cases treated at St. Mary's Hospital and elsewhere the procedure has been to give one-tenth of the erythema dose to the skin over each ovary through an anterior port at intervals of one month, and repeated three or at the most four times. The treatment can do no harm, and has proved successful, so far as I can judge at the moment, in a little under 25 per cent. of cases ; it is therefore well worth trying. I shall be very interested to hear if anyone present has tried the treatment, and with what results.

There is another minor, but sometimes most distressing, complaint, which frequently responds very favourably to small doses of *x* rays, and that is pruritus vulvae. A large number of patients get relief, and not a few are cured, but some, for reasons unknown, do not respond at all. My practice has been to give 1/2 B.S.N., 1/2 to 1 mm. aluminium filter, 120 kV, once a week for three doses, followed by a further dose of 4/5 B.S.N. through 3 mm. aluminium some three weeks later. This latter dose I have used also in cases of leucoplakia, but the results, on the whole, have not been very encouraging. Cases of carcinoma of the vulvae referred for radiation treatment are best treated, I think, by radium, followed by a thorough irradiation by *x* rays of the inguinal glands.

I realize that this communication is incomplete, and deals with the subject in a somewhat scrappy manner, but I hope some points have been raised which will lead to discussion.

THE DIAGNOSIS OF INTRACRANIAL TUMOUR *

BY

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There is no doubt that many members of the medical profession still consider cerebral tumour to be a rare disease which hardly ever occurs in the ordinary run of general practice, and that its manifestations are obscure and unlikely to be recognized. In fact, however, cerebral tumour is rather common, and gives rise to signs and symptoms which are often easy of interpretation. Although the exact localization of the tumour within the brain may be a matter of considerable difficulty, and indeed it may be impossible, the fact that the cranium does contain a tumour can often be diagnosed at an early stage.

Frequency of Cerebral Tumours

It is always difficult to arrive at a figure which expresses with any accuracy the incidence of a disease in the general population, as there are always so many variable factors which affect such a figure ; but in conjunction with Mr. Armitage I have made an attempt to reach some conclusion as to the frequency of cerebral tumour, though these figures are still admittedly open to criticism. We have analysed the records of 13,000 necropsies performed at the General Infirmary at Leeds during the last twenty years, and this series consists of cases of all possible types. We have published a detailed analysis elsewhere,[1] but we were able to draw the following conclusions. There were 3,533 cases in which the brain had been examined (27 per cent.), and of these 264 contained a tumour. Now the brain is examined in any patient who showed cerebral symptoms during life, so that most of the cerebral tumours must have been discovered ; on the other hand, a certain number of symptomless tumours may have been missed. The percentage of brains examined which contained a tumour is 7.45 and the incidence of cerebral tumour in the whole series of 13,000 cases is 2.02 per cent. These figures relate to pathological masses within the skull, and of course a number of these were tuberculomata ; the incidence of actual neoplasms is 1.34 per cent. Table I shows the number of cases of cerebral tumour compared with the incidence of other common lesions of the nervous system in the 3,533 cases examined.

TABLE I

Disease Condition	Number of Cases
Purulent meningitis	373
Tuberculous meningitis	356
Cerebral tumour	264
Cerebral haemorrhage	211
Cerebral abscess	165

For the figures contained in Table II I am indebted to Dr. Georgiana Bonser ; they are taken from the same series of necropsies. In this table the number of cases of cerebral tumour is compared with the number of cases of other common tumours.

TABLE II

Cancer of colon	2.6 per cent.
Cancer of stomach	2.5 ,,
Cancer of lung	1.2 ,,
Cerebral tumour	2.0 ,,
Cerebral neoplasm	1.3 ,,

The conclusion one can draw from this table is that a mass inside the skull is almost as common in the post-mortem room as a cancer of the stomach or of the colon, and that 66 per cent. of these are true neoplasms. These figures, then, give some idea as to the frequency of cerebral tumour, and it is interesting to compare them with some clinical figures from the National Hospital, Queen Square, published by Walshe[4] : of 1,309 cases admitted in one year cerebral tumour heads the list of classified diseases with 163 examples, disseminated sclerosis being second with 133, and neurosyphilis, of all forms, third with 113.

The third table shows the relative frequency of the different pathological types of tumour compared with similar figures quoted by Walshe,[4] which refer to cases operated on at the National Hospital and by Cushing at Boston.

TABLE III

Type	Leeds	London	U.S.A.
Glioma	35.9	40.5	41.5
Metastases	11.3	6.4	4.0
Meningioma	5.6	13.5	12.2
Neurofibroma	1.5	11.5	8.5
Pituitary	3.3	13.1	25.2
Tuberculoma	33.8	2.6	2.8

It will be seen that in all cases the glioma is the commonest type of tumour, but the most striking difference between the lists is with regard to the tuberculoma. The reason for this has been pointed out[1] ; it is because tuberculoma does not give rise to physical signs until it is complicated by tuberculous meningitis, and for this reason practically never reaches the surgeon's hands. It appears that tuberculoma of the brain cannot

* A lecture delivered to the Halifax Division of the British Medical Association, March 13th, 1934.

be diagnosed during life. I do not propose to discuss the other pathological types save to say that there was only one example of gumma, which serves to emphasize how uncommon this condition is.

Symptoms of Increased Pressure

The manifestations of cerebral tumour can be discussed under four headings—namely, those due to increased intracranial pressure, focal symptoms, epilepsy, and mental changes.

With regard to the first group I would like to mention briefly the reasons why a cerebral tumour produces an increase of intracranial pressure. Owing to the skull being rigid the volume of the brain must remain constant, and this volume depends on the mass of the brain, and the volume of the blood and of the cerebro-spinal fluid. The mass of the brain is increased by tumours, but in the slowly growing types this may be very slight. Pressure of a tumour on surrounding veins produces oedema as well as congestion of more distant veins, and, lastly, the circulation of the cerebro-spinal fluid may be obstructed directly—for example, by a tumour compressing the aqueduct of Sylvius. Now the pressure of the cerebro-spinal fluid can be measured very easily by means of a simple graduated glass tube and a lumbar puncture needle. With the patient lying on his side the pressure in a normal person varies from about 80 to 120 mm. of water; this figure, of course, represents the pressure within the skull, and in cases of cerebral tumour it may be 500 mm. or more.

Headache.—The commonest manifestation of increased intracranial pressure is headache, which occurs in nearly 90 per cent. of cases. The headache is paroxysmal in the early stages, being worse when the patient is lying down; it is particularly severe on waking in the morning, and often passes off during the day. The pain is increased by excitement, laughing, coughing, or sneezing, and as the condition advances the headache tends to become continuous. But there are other types of headache seen in cases of cerebral tumour; there may be a localized pain due to pressure of the tumour on the skull, and in this case there may be tenderness on pressure over the site of the pain. In pituitary tumours there is frequently bitemporal headache, and in posterior fossa tumours pain is sometimes referred down the back of the neck, but, on the whole, headache has little localizing value. Headache commencing in adult life which is severe and progressive should arouse suspicion of cerebral tumour, and it may be the patient's only complaint for weeks or months.

Papilloedema.—The next most common manifestation is papilloedema, which is seen in three-quarters of the cases. Papilloedema, which is a true oedema of the disk due to venous obstruction, shows itself as redness, blurring, and eventually swelling and haemorrhages; in the early stages there is little or no impairment of vision, but later the visual acuity diminishes, the visual fields contract, and blindness results unless the pressure is relieved. Papilloedema may start in one eye before the other, but this is of no localizing value. A patient may present himself on account of failing vision, but this is unusual, and by the time vision is impaired there are nearly always other signs and symptoms. Papilloedema is seen in conditions other than cerebral tumour; any cause of increased intracranial pressure will produce it—for example, meningitis or cerebral abscess—and I have seen a high grade of papilloedema develop within two hours of a severe head injury; it occurs, of course, in uraemia and in septicaemia, but the most difficult cases are those associated with arteriosclerosis of the cerebral vessels; in the past two years I have seen six cases with papilloedema associated with gross changes in the retinal vessels and raised blood pressure, but in each there was a cerebral tumour as well as cerebral arteriosclerosis. One concludes, therefore, that if a patient has marked papilloedema and has no renal disease he is probably suffering from a cerebral tumour whether he be an arteriopath or not.

Vomiting.—The third most common symptom of increased pressure is vomiting, which occurs in some 60 per cent. of cases. Like headache and papilloedema, it may be the only symptom at first, and in this connexion I should like to say that the triad of headache, vomiting, and papilloedema is not seen in complete form in more than half the cases of cerebral tumour. Although vomiting of cerebral origin is said to be projectile and unassociated with nausea this is not true in many adult cases; there may be severe nausea and retching. The vomiting is usually worse in the morning at the time when the headache is most severe. Vomiting occurring in an adult without dyspepsia should always arouse suspicion of cerebral tumour, and if it be associated with headache the diagnosis is almost certain.

Vertigo is a less common symptom of increased pressure; it is usually little more than a feeling of unsteadiness and, though it may be severe in cases of cerebellar tumour, it has little localizing value. There are no changes in the pulse rate, respiration rate, blood pressure, or temperature which are in any way characteristic of increased intracranial pressure, but in the terminal stages the pulse is usually slowed.

Focal Signs of Cerebral Tumour

The second group of manifestations of cerebral tumour consists of the focal signs. In the greater proportion of cases a tumour presents pressure symptoms first and focal symptoms later; sometimes the focal symptoms appear at a very late stage, and sometimes never at all. But in some cases the patient presents himself on account of some disorder which is clearly due to a focal lesion of the brain, such, for example, as progressive hemiplegia, progressive speech defects, defects in the visual fields, or unilateral sensory changes. The exact interpretation of these signs demands a full knowledge of the anatomy and physiology of the brain, and forms too large and complex a subject to discuss here; further, when focal signs are associated with pressure symptoms, certain false localizing signs may appear, and an accurate diagnosis becomes increasingly difficult. But what I wish to emphasize is that when a patient shows evidence of an increasing localized lesion of the brain he is probably suffering from a cerebral tumour, despite the absence of headache, vomiting, and papilloedema. I have recently seen a woman who complained of pain down the left side of the body for many months; there were no symptoms of increased pressure, but she was suffering from a tumour involving the right optic thalamus.

The tumours which present themselves by virtue of their anatomical position more often than any others are, perhaps, the pituitary tumours, so that a word about their manifestations is not out of place. These tumours may produce symptoms either on account of diminished pituitary secretion, less commonly because of oversecretion, or from pressure on surrounding structures; an adenoma of the pituitary gland, unlike tumours arising from the pituitary stalk, rarely produce general pressure symptoms, at least not until the late stages. The changes associated with hypopituitarism are obesity, increasing smoothness of the skin, falling out of the hair, somnolence, fall of blood pressure and of metabolic rate, amenorrhoea, and impotence; any one of these may be the first symptom for which the patient presents himself. In addition, there may be great thirst and polyuria, the condition known as diabetes insipidus, and this again may exist for years as an isolated manifestation. Hyper-

pituitarism exhibits itself as gigantism in the young or as acromegaly in the adult. The type of pituitary dysfunction depends on the histological characters of the tumour, and this does not concern us here, but hypopituitarism is sometimes seen in cases of cerebral tumour remote from the pituitary gland. When there is a marked degree of internal hydrocephalus the third ventricle may be enormously distended ; it bulges forwards and downwards, erodes the sella turcica and then compresses the pituitary gland. I have recently seen a case in which a girl complained of headache, failing vision, amenorrhoea, and increasing obesity ; she had very large pupils, which were fixed to light, and a high degree of papilloedema ; *x* rays showed that the sella had been completely disintegrated. At post-mortem examination the distended third ventricle presented at the base of the brain as a large cyst, which had eroded the walls of the sella. The tumour was a small glioma lying in the corpora quadrigemina.

Then there are the manifestations of pituitary tumour which are produced by local pressure, and the most important of these results from pressure on the optic chiasma ; such pressure produces changes in the visual fields, the most usual being bitemporal hemianopia ; less commonly homonymous hemianopia may occur ; if untreated this condition progresses to complete blindness with optic atrophy. Then the enlarging tumour distends the sella turcica ; this can be seen by *x* rays, when the sella is ballooned out, though it preserves its shape. As the tumour expands it may cause expansion of the root of the nose ; there is often a complaint of mucous discharge from the nose or of epistaxis, and rarely of cerebro-spinal rhinorrhoea. These, then, are the manifestations of local pressure, and I would particularly emphasize the changes in the visual fields. There is one other common symptom of pituitary tumour, and that is headache ; this is not the headache of increased intracranial pressure, and it is usually bitemporal and often very severe.

Epilepsy and Mental Changes

The third way in which a cerebral tumour may present itself is epilepsy. Epileptic fits are common in the late stages, when there is marked increase of pressure. There may be fits of the Jacksonian type when the tumour involves the cortex, such fits being of great localizing value. But perhaps the most important condition is epilepsy which antedates all other symptoms of a tumour for months or years. There is nothing about these fits which serves to differentiate them in any way from what we call " idiopathic " epilepsy, and the underlying tumour may lie in any part of the cerebrum. There have been cases in which epilepsy preceded other symptoms for as much as eighteen years,[3] and Walshe[4] considers that when epilepsy occurs for the first time in adult life cerebral tumour is the most likely cause of it. I have recently seen an adult epileptic in whom *x* rays revealed a large calcified mass in the substance of the right frontal lobe, almost certainly a tumour of some kind.

And lastly, there may be mental symptoms. A large proportion of cases of cerebral tumour exhibit mental symptoms at some time or other, although the proportion of cases in a mental hospital suffering from a cerebral tumour is small. The commonest cause of mental symptoms is the increased intracranial pressure, but there are cases in which mental symptoms depend on the anatomical position of the tumour, and they may antedate the symptoms of increased pressure. Tumours of the pituitary stalk are often associated with marked apathy and drowsiness, and tumours in the left hemisphere (in right-handed people), producing speech defects, often show mental changes at an early stage. But the tumours most commonly producing mental changes are those of the frontal lobes and the corpus callosum. The pattern of the mental changes appears to have no localizing value, and the psychotic picture may be of various types. In the late stages, when pressure is much increased, the patient is usually drowsy and apathetic, and this often indicates the beginning of the end. But there may be lack of concentration, failure of attention, indifference, and loss of memory for recent events ; sometimes there is incontinence of urine, with regard to which the patient is usually quite indifferent (" mental incontinence "), and this is often seen in cases of frontal tumour ; in other cases there may be facetiousness and euphoria, and others may show depression.

Differential Diagnosis

We have to bear in mind that any condition producing a rise of intrachanial pressure, or any localized lesion of the brain, may in certain circumstances simulate cerebral tumour. One of the first conditions to consider is renal disease, in which there may be headache, vomiting, and papilloedema, sometimes associated with transient hemiplegia or monoplegia ; the diagnosis here depends on examination of the urine, the blood pressure (which is always raised in such a case), and the blood urea. Cerebral abscess does not often give rise to difficulty, as there is usually a history of recent ear disease ; an important point to remember is that papilloedema is often absent in cases of cerebral abscess. Hydrocephalus following meningitis should not give rise to difficulty, but sometimes hydrocephalus complicates middle-ear disease ; this condition, which is called otitic hydrocephalus,[2] is associated with high-grade papilloedema, and is of doubtful origin. Cerebral aneurysm rarely simulates tumour, for the reason that aneurysms are usually small, and only give rise to symptoms when they rupture. Neurosyphilis may simulate tumour in several ways: the early mental symptoms of a tumour sometimes resemble those of G.P.I., and in both epilepsy may occur. As I have already said gumma is a rare condition, but there was an instance in Leeds recently where a gumma presented as a case of cerebellar tumour. Careful examination of the pupils, combined with serological tests of the blood and cerebro-spinal fluid, should prevent an error in diagnosis. Lastly, cerebral arteriosclerosis unassociated with renal changes produces an infinite variety of clinical pictures which may resemble cerebral tumour, and it is probably the frequency of vascular disease that makes the diagnosis of cerebral tumour much more difficult in middle-aged and older people.

Conclusion

In conclusion, then, cerebral tumour is a common disease which occurs at all ages and produces a variety of signs and symptoms, which may be equivocal in the early stages. But if cerebral tumour be always kept in mind careful examination of the nervous system, together with examination of the cerebro-spinal fluid, will suggest the diagnosis in the great majority of cases ; it is very important to make a diagnosis at an early stage, as many types of intracranial tumour are now suitable for surgical treatment, but surgical treatment can never hope to be of much value when there has been great and permanent damage to the brain.

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HEADACHE FOLLOWING LUMBAR PUNCTURE

BY

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The phrase " Post-punktioneller Meningismus " has been used in the German literature to describe the syndrome that may consist of headache, neck pains, giddiness, tinnitus, nausea, vomiting, and occasionally sphincter disturbances, following, with a certain latent period, lumbar puncture. The word " headache " will be used briefly to connote the above syndrome in this paper.

Historical

Von Quincke[1] introduced lumbar puncture in 1891, and it was soon recognized that headache was an occasional sequel and a definite drawback to its use. In cases of cerebral tumour headache might be succeeded by death, which was apparently the result of a low pressure in the spinal subarachnoid space allowing the high pressure in the cranial cavity to compress the medulla and cerebellum in the foramen magnum. Sicard,[2] in 1902, first assumed that these phenomena were due to leakage through the hole made in the spinal dura, and he found that rest in a bed with the foot raised obviated headache entirely.

Although the leakage theory is not generally accepted, it is supported by the experiments of Strecker,[3] Ingvar,[4] Weed,[5] etc. It is well known that withdrawal of large quantities of cerebro-spinal fluid will in itself produce headache, and this, like post-lumbar puncture headache, can be relieved by injection of saline into the spinal canal (Jacobaeus and Frumerie[6]). The latent period before headache, together with an occasionally observed increase of cells in the fluid, have led some writers to postulate an aseptic meningitis at the puncture point. On either theory the use of a thin needle seems indicated, and a

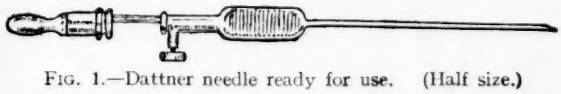

FIG. 1.—Dattner needle ready for use. (Half size.)

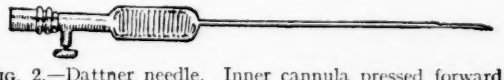

FIG. 2.—Dattner needle. Inner cannula pressed forward; stylet of inner cannula removed.

double-cannula needle was advocated by Hoyt; it was first investigated by Antoni[7] in Sweden, who took spinal fluid from thirty ambulant patients with no consequent headache. Dattner,[8] using the same needle, found that out of 106 patients giving normal fluids only six suffered severe headache, while out of ninety-four with pathological fluids there were only two instances of it.

Investigation

On Colonel L. W. Harrison's suggestion the writer investigated, with the Dattner lumbar puncture needle, 127 cases of treated syphilis as regards the incidence of headache. This instrument consists of an outer cannula, diameter 1 mm., and an inner cannula, diameter 0.5 mm., the latter being provided with a stylet. The inner cannula may be fixed within the outer by means of a screw. It is of rustless steel, but platinum is possibly a better material for the inner needle. The instrument is made by Messrs. Down Bros.

So far as is known to the writer no similar investigation has hitherto been published in this country.

Note on Technique

The sitting or lateral lying position may be used. The advantage of the former is that, as the result of the higher pressure, the fluid flows relatively easily through the small-bored inner cannula, and thus quickly appears on the removal of the stylet when the subarachnoid space has been reached. A disadvantage is that syncope may interrupt the operation in the sitting position. In order to procure tranquillity in the patient during the entry of the needle local anaesthesia is recommended, but is not essential. The cutting end of the inner cannula should be orientated to separate rather than to transect the fibres of the dura or ligamenta flava.

The outer cannula enters to within a short distance of the dura, the screw fixing it is loosened, and the inner cannula is then pressed forward. If no fluid is obtained on withdrawing the stylet the inner cannula is brought back and the outer further advanced before another attempt is made to pierce the dura. When flow is established a syringe attached to the inner cannula expedites withdrawal of fluid. In cases of obesity, spinal curvature, calcification, or ossification of the ligaments, and where there is possibly some pathological change within the canal, it may be difficult or impossible to perform satisfactory puncture in one space while it is feasible in the space above.

Patients are rested face downwards for twenty minutes after the operation and given analgesics to be used in the unlikely event of headache supervening. In such a circumstance they are instructed to lie down if possible, or to come back to the hospital, where they may receive an injection of 40 c.cm. of distilled water intravenously, as recommended by Brain and Strauss.[9]

Results

The table below shows the results as regards headaches, contrasting two different methods of obtaining cerebro-spinal fluid. It may be noted here that the cell counts of fluid obtained with this needle are quite probably smaller than those obtained with larger-bored needles, for the inside of the inner cannula cannot be properly polished, and cells will tend to adhere to it.

Number of Cases	No Headache		Slight Headache		Severe Headache Causing Loss of Working Time	
Using correct puncture with inner cannula:						
26 Pathological fluids...	22	98	3	16	1	2
90 Normal fluids	76		13		1	
Using incorrect puncture with outer cannula:						
1 Pathological fluid	—		—		1	5
10 Normal fluids	5		1		4	
Total	103		17		7	

Indications

The use of the Dattner needle is particularly indicated where fluid has to be obtained for qualitative examination from ambulant patients. Since it takes about ten minutes for fluid to fill the usual manometer, owing to the small bore of the inner cannula, pressure and its changes are not easily registered. The double-cannula needle is recommended by Dattner for cisternal puncture.

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DEFECTIVE HEARING AS A NATIONAL PROBLEM *

BY

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I conceive it to be my duty in this opening paper to make it clear in what respects defective hearing is of national significance, to define the scope of our deliberations, and to indicate, in outline only, the many and varied aspects of the problem which will be dealt with in detail by those who have come here to-day to give to us the knowledge and information they have acquired by special study and experience.

Man is dependent on his special senses for his awareness of his environment and his appreciation of his fellow men, for the possession of sensitive and delicately balanced sense organs linked with the central nervous system enables him to pick up and interpret the varied physical stimuli of the external world, and to react in a way which we describe as normal. If his organs of reception of stimuli are less sensitive than those of his fellows he is at a disadvantage in the struggle for existence, the handicap being particularly severe if the special senses of hearing and vision are involved. Advances in medicine and surgery, the application of physics to the study of defective vision, and the routine inspection and care of the vision of the school child, have reduced the individual and national handicap of visual defects very markedly. The same, however, cannot yet be said of defective hearing, and therefore the Section of Medical Sociology of the British Medical Association is giving this subject special consideration in the hope that the lines of progress towards a solution of the problem will become clear, and that professional and public interest will be aroused to take action for the good of individual sufferers and of the nation as a whole.

At the outset, lest there be any misunderstanding, I must make it quite clear that the special question of the congenitally deaf does not fall within the scope of our deliberations, since this has been given, and is receiving, careful and detailed attention and study by those authorities and individuals who have made it their life-work to help such unfortunate sufferers. It is, however, our duty to concern ourselves with the problems which arise when we consider the incidence, causes, and individual handicap of acquired deafness and defective hearing; to appreciate the grave significance of the problem as a whole to the nation, and to define, if possible, ways and means and methods of prevention and alleviation.

While it has been computed[1 2] that in Great Britain there are at the present time approximately 40,000 totally deaf, the number of individual adults and children suffering from acquired deafness or defective hearing in one or both ears, and described as the deafened, the partially deaf, or the hard of hearing, is largely a matter of conjecture. We should not, I think, be underestimating the number if we placed it at 2,500,000, for reasons which I hope to make clear when dealing with the question of the detection, assessment, and incidence of defective hearing. It must not be assumed, however, that every man, woman, or child among these two and a half millions is seriously handicapped in everyday life, employment, or education by inability to hear satisfactorily. Many of them have impaired hearing in one ear only; others have such minor degrees of deafness that they themselves do not notice it; while in certain cases—for example, in some noisy trades—it may be a positive advantage to the worker to be in a measure deaf to noises which cause distress to others with normal hearing. It is true, nevertheless, that a very large number of adults and children are severely handicapped by acquired deafness, which tends to isolate them more and more from their fellows according to the severity of the condition, to hinder them when seeking employment, and, in the case of the child of school and pre-school age, not only to interfere with educational progress, but to retard or prevent the development of normal speech.

It is clear even from this very brief examination of the position of the partially deaf that special problems of social life, education, and employment have to be faced, studied, and dealt with in detail in any comprehensive scheme for the lessening of the handicap to the individual. However, were our deliberations limited to the consideration of the hardship to the individual directly due to impairment of hearing function alone we should fail to see the wood for the trees, and should lose sight of that aspect of the subject which appears to me to be of grave national importance—I refer to the fact that in the majority of cases the cause of defective hearing is disease. In studying acquired deafness we are at once confronted with problems of disease, and in the interests of the health of the nation, therefore, it is essential that the subject should be approached from the points of view of both preventive and curative medicine.

The National Aspect

One has only to consult the statistics that are available for the routine medical inspection of recruits for the Services, and consider the causes of subsequent discharge of men from the Army during training, to become convinced of the seriousness of the present state of the health and physical fitness of the young manhood of the nation, and to have driven home to one's mind the grave significance to health of the widespread incidence of conditions of disease which find their first outward expression in impairment of hearing function in one or both ears. Five years ago I made inquiries into the causes of rejection of recruits for the Army, and consulted the official reports on the health of the Army which are compiled every year by the War Office authorities. It was a matter of some surprise to find that the chief single medical cause of rejection of men applying for service was old and current middle-ear disease. At that time the ratio of rejections per 1,000 men medically examined was 41.38, and the following table, taken from the Report on the Health of the Army for the year 1932, shows that in recent years the ratio of rejections for middle-ear disease, including deafness, has increased to over 50 per 1,000, while these same conditions head the list of causes of discharge within six months of enlistment.

Principal Medical Causes of Rejection and Discharge of Men from the Army during 1931-2 and 1930-1[3]

Diseases	1931-2		1930-1	
	Ratio per 1,000 Rejected on Examination	Ratio per 1,000 Discharged within Six Months of Enlistment	Ratio per 1,000 Rejected on Examination	Ratio per 1,000 Discharged within Six Months of Enlistment
Diseases of middle-ear (including deafness)	51.20	5.24	53.97	5.53
Defects of lower extremities	41.90	2.46	38.48	2.0
Loss or decay of many teeth	43.24	2.18	35.04	1.50
Insufficient weight	28.77	0.15	26.57	0.22
Other diseases of heart	27.01	0.90	25.36	0.77
Defective vision ...	24.26	1.70	21.74	1.50
Valvular disease of heart	18.98	0.68	17.53	0.70
Flat feet	20.81	1.12	15.48	1.08

* Read in opening a discussion in the Section of Medical Sociology at the Annual Meeting of the British Medical Association, Bournemouth, 1934.

The strain of Army training is not great, and, provided the individual is physically fit, the benefit which should be derived from such training is enormous. On the other hand, if some infection is sapping his strength, the recruit will prove unable to profit from the regular life, physical training, and open-air conditions associated with the healthy environment and life of the soldier in peace time ; while on active service it has been found that men suffering from middle-ear disease are extremely liable to fall sick. In fact it has been proved to be a bad investment to enroll anyone showing evidence of middle-ear disease or defective hearing, although in civil life even such obvious evidence of infection as discharging ears is apt to be lightly regarded by individuals themselves, and, I regret to say, even by parents.

Reliable figures in respect of the state of physical fitness of the general population are not readily available, and it is therefore very fortunate indeed that the data obtained in the systematic and searching examinations carried out by the Services are published in their annual reports by His Majesty's Stationery Office. In 1928, out of 53,075 applicants for service in the Army, 2,568 were rejected as physically unfit on account of diseases of the middle ear and deafness. In 1932, 54,159 men were examined and 2,993 rejected for the same reason, while a further 290 were discharged as unfit on these grounds within six months of enlistment . It is apparent, therefore, that, even among the young men of the nation, between 5 and 6 per cent. show definite evidence of diseases which are associated with impairment of the hearing mechanism, and that these conditions constitute a major cause of physical disability in the nation.

I have emphasized this, the national aspect of the problem of defective hearing because, in the face of the indisputable evidence quoted from official sources, it is abundantly clear that the subject merits the immediate and closest attention of those who are concerned with the nation's health.

Causes of Defective Hearing

Although disease must be recognized as the principal cause of defective hearing, it must also be borne in mind that cases of material hardship due to acquired deafness without impairment of health are not uncommon among certain classes of industrial workers—for example, boilermakers, in whom bilateral defective hearing is directly attributable to the nature of their employment. To a lesser degree also accidental injury to the hearing apparatus is a cause of deafness, but unless both ears are damaged the individual handicap is slight, and common experience teaches that in later years all of us must expect a progressive decline in acuity of hearing which, according to the severity of the condition, necessitates correction by appropriate electrical or mechanical aids, the scientific prescription of which is still in a very elementary stage.

From the medical point of view it is the incidence of defective hearing in one or both ears associated with conditions of disease which is significant. In the individual child of school age it is the presence of bilateral defects of hearing of varying degrees of severity which needs special consideration, for, provided the better ear of the child possesses good hearing, the educational handicap is slight. To the sufferer the health aspect is of first importance, but bilateral impairment of hearing function may occasion social hardship. From the point of view of industry the severity of the defect, the impairment of health, and the nature of the individual's employment are factors which determine the handicap to the worker.

Disease, employment, accident, and advancing age are causes of acquired deafness. Each cause and condition presents its own peculiar problems of prevention, cure, or correction of the defect, or amelioration of personal handicap according to the individual or group of individuals concerned ; and while I propose to deal with prevention in respect to the first and second of these causes, I am leaving it for those who follow to consider such subjects as medical treatment and care of partially deaf children, education, the correction of hearing defects, and questions of vocational selection and employment.

Prevention of Deafness Due to Disease

Diseases of the internal and middle ear and pathological conditions of the nose and throat predisposing to infection of the hearing mechanism affect the hearing and health of the individual, and therefore the preservation of both must be the objective of any comprehensive scheme of prevention. While the prevention of the occurrence of these pathological conditions may be a matter of great difficulty, the checking of the progressive impairment of hearing and of health by the early detection and appropriate treatment of cases and potential cases has already proved of value.

Before any steps could be taken in the direction of preventing and limiting the ravages of diseases affecting the hearing mechanism, it was essential to know the common age of onset of the pathological conditions in question, and to have a reliable routine method for the detection of the earliest signs of defect. Consideration of the figures given in the Army reports previously referred to led to an examination of the data published in the annual reports of the Chief Medical Officer of the Board of Education, in order to ascertain if the high incidence of defects of hearing and middle-ear disease in young men was present among children of school age. The returns of the routine inspections of school children appeared to show that this was not the case, for in 1928[4] the incidence of defects of hearing was 4.2 per 1,000 children examined, and of middle-ear disease 5.4. Even when the defects found in special inspections were taken into account the incidence of these conditions in children of school age appeared to be only one-quarter or one-fifth as great as that found among applicants for service in the Army. Was it possible, therefore, that cases of minor impairment of hearing associated with disease in its early stages were passing unnoticed, for it has long been known that the common infections of childhood are frequently followed by middle-ear disease? A very cursory inquiry revealed the probability that, owing to the difficulty of testing accurately the hearing of school children, ear by ear, in the time available and by the methods then in vogue, it was highly probable that a number of children with minor impairment failed to be detected as needing special examination and treatment by the otologist for conditions of potential disease or actual early disease of the hearing mechanism.

Detection of Defective Hearing by Audiometer

On the occasion of the International Physiological Congress in America in 1929, by the courtesy of the Bell Telephone Research Laboratories in New York, I was given the opportunity of inspecting, and witnessing demonstrations of, various types of audiometers which they had developed, and it appeared that the 4A gramophone audiometer was an ideal instrument for the group testing of children and the detection of early signs of deafness. The American research workers introduced me to their English representatives, the American Telephone and Telegraph Co., and the Western Electric Co. in London, who had had one of these audiometers in their possession for a year or so, and who very kindly loaned the instrument for a preliminary test on children in the borough of Hornsey. It was apparent at once that we

could not obtain satisfactory results with a gramophone record of American speech, and on informing the Western Electric Co. of this they arranged for us to make our own record.

By means of the audiometer, speech sounds of known intensities are delivered to the ear by standardized telephone receivers, forty of which may be linked up without any diminution in the intensity of the sound from each. It is possible, therefore, to test the right ears and left ears of as many as forty children at one time, the record being played once for each ear. There is obviously no opportunity for lip-reading, and as the speech sounds used are numbers, which are written down by the child on a prescribed form, no difficulty of spelling is encountered, and a permanent record is made of what the child has heard. Numbers of two or three digits are used, each figure of which is spoken separately—for example, 526 is heard as five-two-six, and each successive group of digits is stepped down in intensity by a known amount. The level at which the child fails to hear and record the numbers accurately gives a gauge of the acuity of hearing for speech sounds. It is possible easily to test the hearing of 100 children per hour in groups of thirty-two or forty, so that as the whole of a class is dealt with at one time in the space of about 15 to 20 minutes, little disturbance of educational routine is occasioned.

Dr. A. H. Gale collaborated with me in the preliminary survey on the elementary school children in the borough of Hornsey, the results of which were published in the *Medical Officer* for September, 1930.[5] That investigation showed that, by means of the gramophone audiometer, not only were all the known cases of hearing defects picked out, but a very large number of children, unknown to have any defect, also failed to pass the hearing test. Subsequent special examination by Dr. Friel showed that in these new cases there existed conditions which needed treatment. In brief, 6.6 per cent. of the children were found to have defects in one or both ears, as compared with 0.42 per cent. shown in the annual returns for the routine medical inspections of elementary school children. It is true to say that a number of these children had very minor impairment, which would pass unnoticed by the ordinary watch tick, whisper, or voice tests, particularly if conducted in the short time available for the individual in the routine medical inspection of school children. None the less, the cause of the impairment could be detected, diagnosed, and appropriately treated with a high probability of restoring the hearing to normal and eradicating the cause before serious damage had been done or a chronic condition had developed.

Subsequent to the initial inquiry in the elementary schools of the borough of Hornsey, further audiometer tests were carried out in the same area, which substantiated the previous findings. An analysis of the results of tests on 1,368 boys and 1,240 girls—2,608 children in all—ranging in age from 7 to 16, revealed a percentage incidence of defective hearing in one or both ears of 6.8.[6,7] Independent use of the audiometer by the school medical authorities in the borough of Tottenham,[8] where 10,000 children have now been tested, and the results of tests in some of the schools of the London County Council all point to the important conclusion that already among children of school age the incidence of defective hearing associated with conditions of disease is as high as that revealed in the medical examination of applicants for service in the Army, and that therefore, to be really effective, measures of prevention must be devised to include children of pre-school age.

From the evidence which has been collected it appears that if the general population of the country were systematically examined for impairment of hearing it would be found that from 6 to 8 per cent. possess some defect in one or both ears, and that in the majority of cases these defects in young adults or children are directly due to early or chronic conditions of disease. Applying this percentage incidence to the total population of Great Britain, it is apparent that to estimate that two and a half million adults and children have some detectable defect of hearing is not unreasonable. Even if the number were half this figure it would be a formidable task to provide the medical attention which is called for on grounds of the physical disability caused, quite apart from the problems which arise when we consider the lessening of individual handicap.

Prevention of Deafness Due to Employment

It is well known that workers in certain noisy trades—for example, boiler-makers and riveters engaged on ship construction or other work—tend to become deaf, and in a recent investigation for the Industrial Health Research Board[9] I was able to satisfy myself, by direct observation with the audiometer, that workers of fifteen or more years' standing do tend to develop a bilateral impairment of hearing which in some cases amounts to a material social handicap, though not affecting the man at his job. In employment of this nature, measures for the prevention of defective hearing are not concerned with disease but with the physical characteristics of the environment of the worker at his work; for the continuous noise, the air vibrations, and pressure changes caused by the rhythmic action of the pneumatic tools he uses frequently place too great a strain on the delicate hearing apparatus, with the result that the hearing mechanism ultimately protects itself and the individual by becoming less sensitive to the noises themselves as well as to the sounds which the individual wishes to be able to hear in ordinary life.

Among seventy-six riveters, whose duration of service ranged from about five to forty years, I found thirty-three with defective hearing in both ears. In some of these the impairment for speech sounds was of a severe degree. Among fifty-eight non-riveters, mostly fitters, turners, and machinists at the same shipyard, who had similar lengths of service, only four were found to have bilateral defective hearing. It is clear, therefore, that in the case of riveters we must either protect the hearing apparatus of the individual or control and limit the excessive air vibration and noise in the working environment so that the strain on the hearing mechanism is not too great. In both directions efforts are being made to protect the worker against this cause of deafness—namely, by protecting each ear of the individual by a suitable defender, and using silencers or less noisy tools for the work. Various ear defenders are available, and some of these I have tested under conditions of excessive noise between decks on a boat under construction in H.M. Dockyards at Devonport, and also in the boiler shops of the L.N.E.R. at Stratford. To be of use in practice, any ear-stop or defender must be comfortable to wear for long periods. I place this condition first when we consider work in industry, for unless this is the case, however good a defender may be, the worker will naturally not use it if discomfort or pain is caused. Secondly, it must be easily fitted so as to give good protection; and lastly, it must not be costly, for frequent replacement will prove to be necessary. A very simple ear-stop of cotton-wool and wax, devised by W. R. Luxton, my technical assistant, fulfils all these conditions, and judging by the voluntary use of these stops by riveters, holders-up, and rivet boys, and their appreciation of the protection afforded, I feel sure that the workers in excessively noisy trades would derive material benefit from their systematic use.

Conclusions and Routine Measures of Prevention

In planning any general scheme for the prevention of defective hearing there is one fact of outstanding importance which must be borne in mind—namely, that certain conditions of disease arising in early childhood are commonly associated with very minor impairment of hearing function in one or both ears, and that in later life not only may deafness of severe degree develop, but serious injury to health will result if disease in its early stages is left untreated.

Measures of prevention must therefore be effective during pre-school and school age, for it cannot be too strongly emphasized that the evidence which has accumulated during the past five years proves that in a very large proportion of cases minor defects of hearing are among the earliest detectable signs of the existence of pathological conditions, which may, and in fact often do, remain unnoticed unless attention is drawn to them by refined methods of testing hearing and assessing the hearing acuity of each ear of the child in relation to some reliable physiological range or standard of normality.

The investigation on elementary school children in the borough of Hornsey in 1929–30 proved that the first essential step in prevention, the detection of early cases, could be achieved by the routine use of the gramophone audiometer, and enabled a practical scheme for attacking the problem of defective hearing in both its medical and educational aspects to be defined as follows:[6 10] (1) detection of cases and measurement of defects by audiometer tests; (2) medical examination and diagnosis; (3) medical or surgical treatment; (4) retesting of each case by audiometer to assess the effects of treatment; (5) decision by medical and educational authorities in regard to the subsequent care of the child.

The experience of the school medical authorities in the borough of Tottenham,[8] where this routine has been followed for the past three years, is most encouraging, for it has proved both possible and practicable not only successfully to treat a very large proportion of cases of early disease, but to restore hearing to normal in many cases in which the defects were severe. If this can be done in one area among a child population of some 25,000, it can be done generally, and is in fact being done in several other areas, and if our discussion to-day results in stirring the public conscience in the interests of the children of the nation, and in enlisting the co-operation of medical, educational, and scientific authorities, it will not be many years before there will be a material decline in the incidence of defective hearing, a lessening of the handicap to the individual sufferer, and an improvement in the health and fitness of the general population.

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The University of Durham College of Medicine has arranged a special post-graduate course to be held at the Royal Victoria Infirmary, Newcastle-upon-Tyne, from September 10th to 21st (Saturday and Sunday excluded), from 9.30 a.m. The course includes demonstrations, etc., at the Babies' Hospital, City Hospital, and Princess Mary Maternity Hospital on the Monday, Tuesday, and Thursday afternoons.

Clinical Memoranda

PRESERVATION OF THE UMBILICUS IN THE RADICAL CURE OF UMBILICAL HERNIAS IN CHILDREN

The radical cure of umbilical hernia is very rarely called for in children, in whom the natural tendency to cure is very great. Nevertheless there remain cases which neither undergo a spontaneous cure nor respond to treatment by a truss, and consequently operation is indicated.

It is customary in this operation to make an elliptical incision around the umbilicus and remove it entirely. Such a procedure leaves an abnormal and unsightly abdomen, and in children especially may result in serious psychical symptoms in time to come. The absence of an umbilicus in a child at school must call for comments from other children which are apt to make the child self-conscious, resulting in its avoidance of all forms of sport in which this part of the body is liable to be exposed—for example, bathing, sun-bathing, and so on. This in time may make the child morose and shy, so that it will shun the society of other children, and this may be the origin of a "repression" which affects its entire existence.

The removal of the umbilicus in this operation is entirely unnecessary, and in the words of Victor Bonney—to whom I am indebted for the suggestion to apply it to this condition—"the best surgery is not only efficient, but constructive and artistic as well." When Bonney requires a long abdominal incision he makes it through the umbilicus in the mid-line, reforming the umbilicus at the conclusion of the operation. I have applied his technique to the treatment of umbilical hernias in children and have found it entirely successful. He tells me that he has used this incision for a great many years, and has applied it to the treatment of umbilical hernias in adults, in whom, I think, it is very desirable, though not of such great importance as in children.

In cases where the umbilicus has been removed at some previous operation, and in which he has to reopen the abdomen, Bonney leaves a little tab of skin on either side, which is turned in to make a new umbilicus. He has not so far described this technique, but it will appear in the new edition of Berkeley and Bonney's book on *Gynaecological Surgery*, which will be published in the autumn.

Spitzy's operation is designed to save the umbilicus, but I have not found the results so good as when I have followed Bonney's method. This consists in making a vertical incision in the mid-line which traverses the umbilicus, and dissecting the skin off the sac on either side. The sac is then cleared, removed, the peritoneum closed, and the rectus sheath sutured in the usual way. In suturing the skin of the umbilicus the needle is inserted at one edge, it next passes through the fascia in the mid-line, and finally through the skin on the opposite side. When this suture is tied it draws the skin down to the fascia, and as a consequence the depression of the umbilicus is re-formed as shown in the accompanying photograph. If there is redundant skin, some of it may be removed before the sutures are introduced, provided the line of excision follows the natural contour of the skin.

I would like to express my gratitude to Mr. Victor Bonney for prompting me to publish these notes, and I feel that if this technique is more widely practised removal of the umbilicus will come to be regarded as a surgical crime. I am also indebted to Dr. S. N. Varian, house-physician at the Herefordshire General Hospital, for his excellent photograph.

Hereford. R. WOOD POWER, F.R.C.S.I.

Reviews

LEPROSY

Professor JEANSELME, who was the president of the third International Conference on Leprosy in 1923, has published a sumptuous and comprehensive work, *La Lèpre*,[1] which seems destined to hold for long the first place in the world as an authoritative exposition of the subject. It opens with a very complete historical section with numerous references at the foot of each page, and the author critically examines the evidence and concludes that the oldest known references in the ancient literature of Egypt, Palestine, and India are all open to doubt, but he traces the spread over Europe and the Western Hemisphere from the fourth century B.C. The geographical distribution at the present day is dealt with in an equally comprehensive and up-to-date manner, and the recent knowledge that there are several early unrecognized cases for each typical advanced one is brought out. The next section deals with the leprosy bacillus, and here once more we find recorded all that is best in the literature of this difficult subject, from Hansen's to work that appeared only just before this book, including the evidence regarding the possibility of the existence of a filterable form of the virus. In a similar manner the serology, Wassermann reaction, Rubino's test and the diagnostic reactions of Mitsuda and Bargehr are fully dealt with, together with immunity and allergy. In the section on aetiology the critical acumen of the author is well displayed, and after weighing the evidence on both sides in all disputed questions he is rightly cautious in coming to any definite conclusion on points regarding which proof is still lacking. Thus, he records many examples pointing to infection by inoculation through the skin, but he does not accept any of them as furnishing conclusive evidence that this is the usual mode of infection, and wisely leaves the point open.

The longest section is devoted to a combined anatomical and clinical description of all the stages and forms of leprosy. In this Professor Jeanselme describes and illustrates the particular condition, and then gives its microscopical characters with drawings in the text, mostly taken from the author's own collection, together with fourteen beautiful coloured plates at the end of the work showing both the naked-eye appearances of the patients and the microscopical details of their lesions, commencing with the earliest signs and going on through the macules and the tuberculoid form of Darier to the advanced nodules in the dermal variety, the various lesions of nerve cases, and eye and other complications ; the whole constituting a full descriptive atlas of the disease. After dealing with the evolution, prognosis, and diagnosis of leprosy, he describes the prophylactic measures in force in various countries of the world, many of which he has visited in the course of years of investigation. Here once more he gives an impartial survey of a very controversial subject. While he attributes the decline of leprosy in the Middle Ages in part to the rigid and cruel segregation then enforced, and rightly gives credit to the humane Norway system in reducing the disease in Scandinavia, he points out that improved treatment has led to the abandonment of rigid segregation as the one panacea in all countries except Japan, Venezuela, and Colombia, and records the adoption of treatment of early cases at hospitals and dispensaries, and the colony systems in Madagascar and elsewhere.

The section on treatment is equally well balanced, and although the results of the modern injection of chaulmoogra preparations are fully recorded, their limitations are also brought out, and the place of general hygiene and diet is recognized. In short, this work is a monument of industry and erudition, and should find a place in every library and be indispensable to all serious workers on leprosy, in spite of its necessarily high price.

LEONARD ROGERS.

[1] *La Lèpre.* Par Ed. Jeanselme. Paris: G. Doin et Cie. 1934. (Pp. 680 ; 259 figures, 14 coloured plates. 600 fr.)

PULMONARY TUBERCULOSIS

Professor DIETLEN's short textbook on Tuberculosis of the Lungs[2] gives a well-documented and up-to-date account of the pathological anatomy of the countless forms of pulmonary tuberculosis in human beings, and of the various ways in which the different lesions found arise, or may be thought to arise. The number of the classes into which the patients may be divided is very large, and no doubt, from the point of view of the specialist in pathology and classification, is very satisfactory ; the medical practitioner will find little to help him with their diagnosis in Professor Dietlen's pages. A short and generalized account of the treatment of phthisis is given at the end of the book, which is furnished with an index. The volume will be read with interest by all medical men and pathologists concerned with the progress of the theoretical pathology (if one may so call it) of phthisis.

Dr. MARIE's pamphlet on the Gold Treatment of Pulmonary Tuberculosis[3] describes the more recent and successful forms of the gold treatment, noting that the claims originally made for sanocrysin (gold sodium thiosulphate) proved later to be excessive. There seem to be no contra-indications for the gold cure, which is admirably suited to phthisical patients with pregnancy or diabetes as a complication, with the exception of infancy, cachexia, tuberculous enteritis, albuminuria, jaundice, and a tendency to haemorrhages other than haemoptysis. The gold salts employed are two in number: sanocrysin, given intravenously, and allochrysin (thiopropanol sulphonate of gold and sodium), administered by intramuscular injection. With febrile patients the initial dose is of 5 cg. ; one injection is given each week, the dose increasing weekly by 5 cg. to a maximum of 50 cg., and in the course of the treatment from 5 to 12 grams of the gold salt are given. If the fever is high two injections may be made each week, the dose being increased as before. In apyretic patients the maximum dose should be 25 cg. of the gold salt. Even with these relatively small doses complications may occur, such as pruritus, erythema, or stomatitis, which demand interruption of the treatment or reduction of the dose ; nausea, a transient rise of temperature, abdominal pains, and diarrhoea may also occur, and are in general to be disregarded. Exceptionally such grave complications as oedematous desquamative erythrodermia, acute nephritis, jaundice, and a tendency to haemorrhages may result from the gold treatment. Dr. Marie quotes a number of cases in which the treatment has been successful, and he recommends it strongly to those who are responsible for the treatment of phthisical patients.

In his little book on Intrapleural Pneumolysis[4] Professor SAYÉ of Barcelona sets out clearly and at length what can be done to increase the scope of the artificial pneumothorax treatment of pulmonary tuberculosis by dealing with the adhesions that so often limit its utility. More than twenty years ago Jacobaeus of Stockholm introduced

[2] *Medizinische Praxis.* Band xvii. *Die Lungentuberkulose.* Von Professor Dr. Hans Dietlen. Dresden and Leipzig: Theodor Steinkopff. (Pp. 141. RM. 8 ; geb., RM. 9.)

[3] *La Chrysothérapie de la Tuberculose Pulmonaire.* Par Dr. Julien Marie. Paris: J. B. Baillière et Fils. (Pp. 35 ; 16 figures. 6 fr.)

[4] *Pneumolyse Intrapleurale.* Par Louis Sayé. Paris: Masson et Cie. (Pp. 242 ; 119 figures. 40 fr.)

the method of severing these adhesions by the use of the galvano-cautery, and in 1923 recorded 200 cases, with the occurrence of severe haemorrhage in three instances and serious pleural complications in about 11 per cent. of the cases. The method has been improved by Maurer of Davos, and Professor Sayé gives a full account of his own experience in the division of pleural adhesions in patients requiring the artificial pneumothorax treatment, with illustrative skiagrams. He also employs resection of the phrenic nerve and treatment with sanocrysin in suitable cases, with success. The book is well written, and should be in the hands of all surgeons practising the artificial pneumothorax treatment.

In their account of the Reactions of the Tissues of the Lung in Tuberculosis[5] Leuret and Caussimon describe how the lung acts as an excreting organ in getting rid of foreign bodies or tubercle bacilli brought to it either by the blood stream or the bronchi. The foreign body, whether a grain of lycopodium or a tubercle bacillus, is attacked in the lung by histiocytes and the cells lining the alveoli, and if all goes well is excreted into an alveolus for expectoration. Numerous admirable microphotographs illustrate the authors' argument, which is based on material obtained from experimental animals as well as from human beings.

RESECTION OF THE PROSTATE

In his Endoscopic Resection of the Prostate,[6] Dr. E. Papin summarizes all that it is essential to know on this subject. Omitting any historical references, he begins by considering the anatomy and pathology of obstructions in the region of the bladder neck. The literature has now assumed tremendous proportions, and Papin's simple classification of lesions in this neighbourhood will be extremely helpful to those who have found the pathology of this subject confusing. The instrument he employs is the McCarthy resectoscope. The description of his technique has been considerably shortened by the inclusion of numerous excellent plates showing the resectoscope and the operating theatre with the patient on the operating table. The technique of cystostomy under local anaesthesia is also given, because Papin employs this as a preliminary measure in 25 per cent. of his cases. The mortality table at the end of his work explains this frequent use of suprapubic drainage, since it shows that the chief danger of the operation is sepsis. For anaesthesia he uses the epidural method, injecting 40 c.cm. of 1 in 1,000 percaine. In the majority of cases post-operative treatment consists of tying in a catheter for eight to ten days.

In order to give some indication of the risk of the operation, the author appends various statistics from American clinics. The discrepancy in the figures furnished from these different clinics is considerable, ranging from three deaths in 515 cases to eighteen in 125. In his own clinic he states that he lost three cases out of the first twenty-nine on which he operated, but that in a subsequent thirty there was no death. On the important subject of the indications for perurethral resection he comes to the conclusion that it is the operation of choice for minor enlargement of the prostate, for prostatic bars, and in patients suffering from marked impairment of renal function, cardiac and pulmonary lesions, and diabetes. It may also be used when the patient refuses other operations.

Papin's brochure, which contains only sixty-six pages, provides a masterly summary of this important subject. It is clearly written, well printed, and profusely illustrated.

[5] *Les Réactions du Tissu Pulmonaire dans la Tuberculose.* Par E. Leuret et J. Caussimon. Paris: Masson et Cie. (Pp. 86; 55 figures. 30 fr.)

[6] *La Résection Endoscopique de la Prostate.* Par Dr. Ed. Papin. Paris: Gauthier-Villars. 1934. (Pp. 66; 47 figures. 30 fr.)

EXTERNAL DISEASE OF THE EYE

There are few parts of the body where the effects of fatigue and of disease can be observed more readily, with such nicety, and with complete freedom from interference, as in the superficies of the eye and its associated structures. An observer with keen vision, mental and ocular, with or without the aid of suitable magnifiers, has a wide field of structures of the utmost delicacy under view. It is no wonder many have found the external disease of the eye a fascinating study and an opportunity for recording and portraying their observations. The latest and most industrious exponent is Dr. Donald T. Atkinson of Texas, whose book, *External Disease of the Eye*,[7] is a noteworthy production. The title gives a somewhat limited idea of the range of the work, for of the 700 pages some 250 are devoted to the consideration of orbital growths, iritis, cyclitis, glaucoma, cataract, squint, and a variety of operative measures. It is not usual for all these to be embraced within the range of "external disease," though it is true that many of the symptoms of these diseases may be observed without the use of the ophthalmoscope.

The book is written from the personal standpoint, though there are ample references to the observations and researches of others, so that the reader is impressed with the feeling that the author is putting himself into his work with an enthusiasm that is captivating. Further, by means of his artistic skill with brush and modelling wax, he is able to present his impressions in a most vivid manner. We have met with few books so profusely illustrated, albeit some of the reproductions of photographs are somewhat gruesome. The author has given special attention to the various fungus diseases which are so common in the Southern States, and also to ocular manifestations of yaws and leprosy, with which the medical officer in the Pacific Islands must be familiar. Treatment, both medical and surgical, is considered in detail, and there are useful bibliographies. The book is sure to command attention in the United States.

MAN'S FOREBEARS

Although Dr. L. S. B. Leakey has named his book *Adam's Ancestors*,[8] its chief subject is not the origin of man but the origin and evolution of stone cultures. No one has a better right than Dr. Leakey to instruct the public concerning the handiwork of prehistoric man.

Although only just escaped from his "twenties," this author has accomplished more than most men do in a lifetime. He has led three archaeological expeditions to East Africa and made discoveries there of a most surprising nature. Kenya Colony and Tanganyika Territory he found to be richer in deposits of the last period of the earth's history—the pleistocene period—than any other known part of the earth. As the pleistocene period, to which Dr. Leakey gives a duration of a million of years, covers the evolution and differentiation of humanity it is clear that East Africa offers great inducements to those who are in search of remains of early man. Dr. Leakey found evidence of the existence of man in East Africa throughout the whole of the pleistocene period; he discovered stone tools in the oldest as well as in the latest of the deposits of that period which exist in Kenya Colony and Tanganyika Territory. He found not only the stone tools but also fossil fragments of the men who shaped and used those tools. He assigns these fossil fragments

[7] *External Disease of the Eye.* By Donald T. Atkinson, M.D. London: Henry Kimpton. 1934. (Pp. 704; 479 figures. 35s. net.)

[8] *Adam's Ancestors. An Up-to-date Outline of What is Known about the Origin of Man.* By L. S. B. Leakey, M.A., Ph.D., F.S.A., F.R.A.I. Foreword by Sir F. Gowland Hopkins. London: Methuen and Co., Ltd. 1934. (Pp. 244; 30 figures; 12 plates. 7s. 6d. net.)

to men of the modern (neanthropic) type, and is of opinion that this type was evolved in Africa. He also holds the view that East Africa was a centre in which various stone cultures found in Europe were invented and elaborated.

Adam's Ancestors throws much light on the early stone cultures of the pleistocene period. Seeing that this period is supposed—and there are valid reasons for the supposition—to have lasted for a million of years, and that already man was a tool-maker at the very beginning of the period, it is clear that the various "cultures" invented and utilized during this long era cannot be grouped under the six or seven simple headings which do duty at the present time. Dr. Leakey shows that under the term "Mousterian" are grouped a series of distinguishable cultures. He deals, too, with the factors which bring about the evolution of new cultures. It is quite clear that the story of man's stone cultures, when fully told—as is certain to be the case some day—will be very long and very elaborate.

In the course of his student days at Cambridge Dr. Leakey prepared himself for his self-appointed task. In the field he continually added to his knowledge, experience, and equipment, so that now he is our leading authority on all that pertains to a scientific search for stone cultures, fossil remains, and prehistoric habitations of man. In this book he places a summary of his methods and of his views before the English-speaking world. The book is just what a young medical man requires—if he wishes to know the latest concerning the history of the evolution of early humanity and the methods which must be learned and adopted if he would join in the search for fossil human bones and crudely worked prehistoric tools.

Notes on Books

The second edition of WHITBY'S *Medical Bacteriology*[9] only contains a few more pages than the original book, and has the same character and arrangement. The first part, entitled "Descriptive Bacteriology," has proved itself a useful guide for medical students preparing for their examinations, and the second part, dealing with applied bacteriology, has been a convenient source of information for doctors wishing to find out what bacteriological tests can be of assistance in different diseases. A new feature in the present book is a chapter on bacterial variation and its relation to immunity. It is advised that this chapter be omitted by the junior student during a first reading, and not many undergraduates are likely to disregard this warning. More serious students who are settling down to try to fathom the mysteries of flagellar and somatic antigenic structure and haptenes would be grateful for the addition to this chapter of a fairly extensive bibliography or reference to other books in which these questions are considered at greater length. The same criticism might be made of other chapters: without adding much to its bulk the value of the book would have been increased by references to additional reading. However, these are minor points. The great merit of Dr. Whitby's work is that it gives within a moderate compass a clear and reliable account of medical bacteriology, and, in the opinion of many who know it well, it is the best introduction available to the bacteriological section of clinical pathology.

By this time the little book entitled *Parenthood*, by MICHAEL FIELDING, is well known.[10] A third edition has just been issued, and the book has been very carefully revised and somewhat enlarged. It is described as "a manual of birth control," and may be accepted as not only the most popular, but the best presentation and exposition of the subject from the point of view of those who have no doubts of the propriety, advantage, and general effectiveness of the practice which it advocates. This is frankly the aspect from which the book is written, but it is by no means an extravagant or one-sided statement of the case. As Mr. H. G. WELLS says in a preface: "It gives very clearly and completely, with all the decency of a scientific textbook, exactly what is clearly known and what is not clearly established about preventive methods. It is never vague, sloppy, lyrical, nor shamefaced." There is another side to the question, from the moral standpoint, the strength of which the author does not seem able fully to appreciate; nor does the real danger of under-population appear to be thought worthy of any reference; but if these points are borne in mind, and information upon them sought elsewhere, the reader of this little book should be able to form a reasonable judgement on the subject, and, should he wish to apply this in practice, to do so with clear and reliable knowledge of the methods, successes, and limitations of birth control. The revision has brought the manual fully up to date, and there is an interesting chapter on "Methods of the Future."

In *The Lighter Side of the War*[11] Dr. A. CECIL ALPORT gives an account of his varied experience during the period August, 1914, to December, 1918, drawn from diaries and notes taken at the time. He was first in South Africa, and gives an interesting account of the rebellion there in 1914, which tells the reader much that is probably but little known, having been, naturally, so overshadowed by the European debacle. Then in the campaign in German South-West Africa, where he records how a colonel refused to have him as a medical officer because he did not play bridge. After a brief period of training at home he served at Salonika and in Macedonia, where he had an extensive experience of malaria in the Struma Valley, and wrote a book, published in 1919. Finally, he was a short time in France. This record, very frankly written, of personal contacts shows the reactions of an independent civilian to Army routine, and contains many quite fearless comments on men and manners.

Dr. FERRIER'S booklet on *The Cure of Tuberculosis*[12] connects the development of tuberculosis with phosphaturia and with the consumption of acid-producing diets. His treatment is dietetic; the food taken should be largely proteinaceous, and articles of diet that tend to produce acids in the stomach or intestine are not to be allowed. These include milk, fats, fresh fruits, and wine. There should be three meals a day, plenty of water should be drunk, and insoluble calcium salts are advised to combat the decalcification that results from excessive acidity. Dr. Ferrier has found treatment on these lines to be no less efficacious in leprosy.

Miss REYNARD'S *Institutional Management and Accounts*[13] is a brief guide in matters of finance for the use of managers of residential institutions such as students' hostels, schools, residential clubs, and the like. It shows how the budget should be kept and what the ideals to aim at should be, as judged by the analysis of the accounts of a number of men's and women's hostels of various sizes. The forms in which accounts should be kept are considered at the end of the volume, which is well set up, clearly written, and thoroughly practical. It may be warmly recommended to those for whom it has been written.

The thirteenth edition of *How to Drive a Car* has been published by the Temple Press, Ltd. (2s. 6d.). As the title suggests, this handbook is intended primarily to assist the newcomer to motoring to acquire road sense, together with skill in the handling of a car. Details of how to take particulars after an accident are given, but, more important still, a chapter is devoted to the art of avoiding accidents.

[9] *Medical Bacteriology, Descriptive and Applied, Including Elementary Helminthology.* By L. E. H. Whitby, C.V.O., M.A., M.D., F.R.C.P., D.P.H. Second edition. London: J. and A. Churchill, Ltd. 1934. (Pp. 338; 74 figures. 10s. 6d.)

[10] *Parenthood: Design or Accident? A Manual of Birth Control.* By Michael Fielding. Preface by H. G. Wells. Third edition, revised and enlarged. London: Williams and Norgate, Ltd. 1934. (Pp. 208. 3s. 6d. net; paper cover, 2s.)

[11] *The Lighter Side of the War: Experiences of a Civilian in Uniform.* By A. Cecil Alport, Major R.A.M.C.(T.F.). London: Hutchinson and Co., Ltd. 1934. (Pp. 290; 17 illustrations. 18s.)

[12] *La Guérison de la Tuberculose.* By Dr. P. Ferrier. Second edition. La Charité-sur-Loire: Robert Thoreau. 1934. (Pp. 125.)

[13] *Institutional Management and Accounts.* By H. Reynard, M.A. London: Longmans, Green and Co. 1934. (Pp. 31. 5s.)

THE BATHING POOL AND DEAFNESS

BY

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The rush to the swimming pools during the recent heat wave has brought in its wake the inevitable crop of infected ears and sinuses. The public is still unaware of the potential seriousness of these infections, and it behoves us all to stress the importance of prevention as well as of prompt treatment.

From the standpoint of ear infections patients fall into the following groups:

(*a*) Those with healthy mid-ears and outer ears.
(*b*) Those with a tendency to external otitis.
(*c*) Those with old healed otitis media, with or without perforation.
(*d*) Those with active middle-ear disease.
(*e*) Those with so-called catarrhal mid-ear deafness.

It is highly desirable that bathers should be grouped and advice given to them in accordance with their conditions. Wherever impacted wax is found it should be removed, if necessary after soaking for a few days with guttae No. 1. Keratosis obturans is even more dangerous and obstinate, but perseverance with these softening drops will enable it to be evacuated by gentle syringing, and certainly no bathing can be permitted till the outer ear is quite healthy. In syringing use equal parts of saturated solutions of borax and boric acid, as hot as can comfortably be borne. Hot solutions are far more efficacious than colder ones, and never produce troublesome labyrinth irritations.

The danger of these conditions lies in the fact that, should otitis media occur, it is infinitely more difficult to treat.

Otitis externa has various clinical manifestations, but the commonest is a dry seborrhoeic eczema, commonly associated with a similar condition of the scalp. Treatment should always be in collaboration with a dermatologist. Unfortunately, the patient commonly presents himself after an infection has occurred, with swelling and weeping tissues and possibly even furuncle formation. In general, wetting the ear is to be avoided, but treatment may be instituted with gentle syringing. This should never be repeated unless excessive debris accumulates later. Much the most efficient treatment afterwards is to fill the ear with guttae No. 2 and then pack in ribbon gauze soaked in ung. hyd. ox. flav. This is repeated daily. When the acute condition has subsided a simple spirit and boric drop is useful, or in cases with much pruritus or a tendency to lichenification, guttae No. 3.

Mid-ear infections are, of course, far more serious, and patients with mid-ear disease, active or quiescent, should be made aware of the risks they run. Unfortunately, the practice of plugging the ears is regarded in general as sufficient prophylaxis. I believe this is a dangerous fallacy. Whilst admittedly the entrance of infected water into an unhealthy middle ear via a perforated tympanic membrane is clearly one method of infection, nevertheless I am strongly of the opinion that the commonest method is via the Eustachian tube. In those who dive or swim much under water, but above all in the indifferent swimmers who breathe at the wrong moment, there is always a liability to get a "noseful" as well as a mouthful. A swallowing action then takes place in an effort to inhibit further respiration (the physiologist's "respiration of deglutition"), and the opened Eustachian tube is liable to be flooded with infected water. Further passage into the mid-ear can occur, more particularly if the tympanic membrane has a perforation to act as a bung-hole. If this is correct, it means that plugging the ears has little value. My own advice to such patients is to avoid diving and under-water swimming. However, if one does get a "noseful" he must on no account swallow or snort or blow. The best plan is to hold the head slightly forward and breathe gently through the widely opened mouth until the nasopharynx has dripped clear.

Patients in group (*d*) and, to a less extent, group (*c*) must realize that unless they are exceptionally good swimmers the utmost danger attaches to such strokes as the "trudgeon" or the "crawl." A simple breast stroke is the only one permissible, and actually I always attempt to dissuade them from swimming at all.

The progress and treatment of acute otitis media and its complications are well known, but it is not sufficiently realized that much deafness can occur insidiously as a result of a pathological process quite unaccompanied by the dramatic symptoms of pain, otorrhoea, and so on, and which is therefore allowed to progress unchecked. The underlying cause, I believe, is again the entry of brine into the middle ear. Normally an exudate in the tympanum should be evacuated via the Eustachian tube. Such drainage is very readily impeded by swelling of the mucosa lining the tube, or by interference with ciliary action. We have only to notice the congested eyes of so many bathers to realize what can occur in the much more delicate columnar ciliated epithelium of the middle-ear cleft. If at the same time some brine has become trapped in the tympanum, it will, by its hypertonicity, induce an exosmosis, so filling the ear more or less completely with an aseptic exudate.

Patients with this condition complain of "hearing through cotton wool." They have no pain, or at most an occasional stab or prick, and their temperature is not raised above 99°. On inspection, the drum is quite typical: congestion involving the lower half, distorting the cone of light, but hardly interfering with the appearance of the short process or of Shrapnell's membrane. Occasionally a fluid level is visible and more rarely actual bulging of the lower half of the drum.

Apart from the liability to infection, this condition is of supreme importance in that it aggravates and accelerates all forms of mid-ear deafness, and indeed it is probably the actual initiating factor in many cases. Treatment should clearly be preventive, but we must above all avoid such heroic measures as myringotomy. Of course, if infection occurs the case is treated on the classical lines for acute otitis media; otherwise twenty-four hours in bed in a cool airy bedroom will enable the insulted mucosa to regain normality and to absorb the exudate. The hearing should, however, be carefully tested subsequently, when it will be found only too often that some diminution has occurred. Theoretically one would expect it to show lowering of the upper tone limit, suggestive of round-window lesion, but I have no conclusive findings on this point. Treatment must, of course, be left to a competent aurist.

GUTTAE

No. 1

Sodii bicarb.	gr. x
Glyc. acid. carbol.	ʒ i
Glycerin.	ʒ iii
Aq.	ad ʒ i

No. 2. Crooke's mercurochrome for aural use.

No. 3

Liq. picis carb.	ɱ v
Ung. hyd. nit. dil.	ʒ i
Sp. vini rect.	ʒ i
Paraff. liq.	ad ʒ i

THE HEALTH SERVICES OF THE NATION

ANNUAL REPORT OF THE MINISTRY OF HEALTH

The annual report of the Ministry of Health[1]—not to be confused with that of its Chief Medical Officer—is a matter-of-fact document presenting in their baldest form the manifold activities of a department which is not only the guardian of the public health, but has oversight of local government in general, and shares with the Home Office the functions of Ministry of the Interior. How varied are the duties which the Ministry is called upon to perform is shown in outline in this report. They include the inspection and supervision of food, measures to deal with water shortage, flood prevention, sewage disposal, public cleansing, the welfare of the blind and of the deaf and dumb, the control of infectious diseases, national health insurance, health education and propaganda, local government finance, relief for distressed areas, town and country planning, and—a matter on which the Ministry has been much criticized during the year—housing and slum clearance.

Official intervention in housing is taken by many people to mean only the erection of new working-class houses in an unending procession. But a very important piece of work by the Ministry, or by the local authorities under its inspiration, is the inspection of existing houses, and action to make them fit for continued habitation. During 1932 one and a half million houses were inspected by local authorities in England and Wales, and as a result of action, formal or informal, by the owners or by the local authorities in their default, 559,000 of them were rendered fit. A prudent use of the powers of local authorities in this respect can prevent the gradual deterioration of houses and the formation of slums, and the Minister urges that inspections for defects should be carried out in a more systematic way. With regard to new houses, the number of houses having a rateable value not exceeding £78 (£105 in London) built since the armistice with State assistance is 1,177,863, and the number built without such assistance is closely parallel—namely, 1,150,522. There seems reason to believe that the Government's reliance upon private enterprise as the main source of supply in the future, as testified by the discontinuance of the housing subsidy, will be justified.

Results of Local Government Act, 1929

The most interesting section of this year's report is entitled, "Special Survey of Public Health Services." The Local Government Act, 1929, cloaked under its prosaic title a vast measure of social reform, which is destined to have yet more profound effect upon the public health services as time goes on. Its greatest operation was to abolish boards of guardians and transfer their duties and resources to the councils of counties and county boroughs. Services which could, as a matter of law, be performed by public authorities were thereupon to be separated from the Poor Law; means of co-operation were instituted between local authorities and voluntary hospitals; and, finally, a more active interest by county councils in public health matters was contemplated as a result of the new responsibilities which were placed upon them. The main intention of the Act was to concentrate the medical services of an area in the same hands, not merely to transfer certain functions to the local authorities, but to ensure that those functions, so far as they related to health, were integrated with the already existing public health side of the local authorities' work, especially by the appropriation of transferred institutions as general hospitals or for other public health uses, and by the association of the medical officer of health with the administration of the Poor Law medical services.

As a condition of the payment of block grants from the national exchequer to the local authorities in respect of health services, the Minister is required to satisfy himself that reasonable standards of efficiency and progress are being maintained. As soon as the Act was passed, therefore, general surveys of these services began to be undertaken by the medical officers of the department as the best means of combining the enlarged local responsibility with adequate central supervision. These surveys of counties and county boroughs have now been practically completed, except for London, which is to be reviewed in the next annual report. For the first time, therefore, we have, in the present report, some authoritative general impressions of the early years of a new public health era.

The old boards of guardians provided for the sick by a domiciliary service through district medical officers and by institutional services. For the domiciliary service the local authorities have at present no alternative statutory authority, so that it must continue to be provided under Poor Law powers. The most usual arrangement is to employ general practitioners as part-time medical officers, but in some areas the post of district medical officer is combined with that of officer of the institution, and in a few places the service is conducted by whole-time officers. A few authorities have desired, as an experiment, to adopt a panel system, enabling the patient to obtain the services of a doctor of his choice—a method suggested to local authorities by the British Medical Association. During 1933 the Minister sanctioned departures from the Public Assistance Order necessary for this purpose in the case of certain districts in the counties of Kent and Wiltshire and certain parts of the county boroughs of East Ham and Newcastle-upon-Tyne, and it is stated that several other schemes of an experimental nature are under consideration. A number of local authorities have an open mind as to the most suitable method of administering these services, and the Minister intends to cause some special inquiries to be made by a medical officer of his department into the various methods of working. The surveys, however, have shown that the need for a liaison between the district medical service and the facilities available under other health services of the local authority has been insufficiently appreciated by a number of public bodies, and the Minister hopes that, as a result of representations he has made on the subject, action will be taken to remedy this defect.

Appropriation of Institutions as General Hospitals

Twenty-seven county borough councils have each appropriated one or two Poor Law infirmaries as general hospitals under the Public Health Acts. In the counties the position is by no means so favourable to early appropriation on a large scale, and up to the present only one county council outside London (Salop) has appropriated a transferred institution as a public health hospital, though it is understood that Middlesex is proposing to take steps with a view to the appropriation of its six Poor Law hospitals within the next two years. Where appropriation has been found practicable the problem of securing full association between the appropriated hospital and the public health work of the council has been greatly simplified. The Minister lays stress upon the need for associating the medical officer of health with the work of the transferred institution, whether appropriated or not. Indeed, the most striking fact which has emerged from the surveys is the predominant importance of the medical officer of health as a factor in the health organization of the local authority. "A capable medical officer of health," says the compiler of the report, "is by far the greatest asset which any health authority can possess." The number of medical officers of health in England, by the way, is 1,149, of whom 401 do not engage in private practice.

As for other medical officers, it appears to the Minister that, with the increasing use of the council hospital for "acute" work, and the increasing realization of the need for careful diagnosis and definite curative treatment, the amount of medical supervision necessary for these hospitals must continue to grow; but in some of them the salary paid to the part-time medical officer presupposes an amount of medical supervision which is inadequate for the proper needs of the hospital. On the subject of co-operation with voluntary hospitals, the Minister states that in some areas the provision for consultation by the local authority with a representative committee of the voluntary hospitals has been regarded as a somewhat unpleasant statutory duty which can

[1] *Fifteenth Annual Report of the Ministry of Health, 1933–4.* H.M. Stationery Office, 1934. (6s. net.)

be discharged once and for all by a formal meeting, without any practical measures for consideration. The view of the Minister, however, is that there should be close and continuous co-operation, and a readiness on both sides to regard their respective resources as units in a single hospital service.

Broadly speaking, the surveys do not suggest that in the county boroughs any great or general expansion of accommodation to meet the immediate demands for hospital treatment is urgently required. In the counties, too, taking them generally, the surveys have not disclosed any great evidence of an actual shortage of beds, but there is a considerable amount of accommodation at present used for the sick which is not entirely suitable for the purpose. The need is felt for further institutional provision for advanced cases of tuberculosis, and the beds provided for sanatorium cases are frequently occupied by cases not likely to respond to such treatment. The surveys confirm the view that infant welfare centres have taken their place as an integral part of the health service, and it is also considered gratifying that county borough councils generally have appreciated the importance of including an ante-natal service in their maternity work. During 1933 the number of expectant mothers who attended at ante-natal centres represented 42.2 per cent. of the number of notified births. The number of such centres provided by public authorities in the county boroughs has increased during the last four years from 242 to 281, and by voluntary agencies from fifty-eight to sixty-three, and the number of women attending has grown from 93,000 to 126,000, while in the counties the increase, both in number of clinics and in attendances, is proportionately even more striking.

MATERNAL MORTALITY: INFECTIOUS DISEASES

After all this it is disappointing to find the rate of maternal mortality still advancing. For 1933 the rate per 1,000 live births and stillbirths was 4.32 (being 1.75 for deaths from puerperal sepsis and 2.57 for deaths from other causes). In 1932 the rate was 4.04, and in 1931, 3.94. The infant mortality rate for England and Wales was 64 per 1,000 births, almost the same figure as for 1932, and a little below that for 1931.

A slight diminution is noted in the proportion of the known tuberculous population dealt with under the schemes of the local authorities. An increase in the number of consultations between tuberculosis officers and practitioners is remarked as encouraging. A slight increase in the number of deaths from pulmonary tuberculosis is attributed to the prevalence of influenza during the first quarter of 1933. The number of attendances at treatment centres for venereal diseases continues to increase, the total in 1933 being the highest recorded since the institution of the schemes. The notifications of cases of infectious disease reveal an increase in the prevalence of scarlet fever in the latter part of the year, concurrently with a rather less marked increase in the prevalence of diphtheria. The decline in the incidence of small-pox continued, and in England and Wales only 631 cases were notified during the year, with two deaths. The tables, however, relate only to the calendar year, while the report itself carries the story to March 31st, 1934, and it is recorded that this year has seen the first outbreak of severe small-pox in this country since May, 1929. This occurred at Blackburn in January, where twenty-six persons suffered from the disease, and there were four deaths. There is some ground for suspecting the source of infection in cotton from Egypt. The number of vaccinations expressed as a percentage of total births (38.2) was the lowest recorded, and the declarations of conscientious objection (47.5) the highest.

The Welsh Board of Health, whose report is appended to the main document, comments on the decreasing mortality from pulmonary tuberculosis in Wales. On comparing the years 1931–3 with 1921–3, in only two counties (Brecon and Monmouth) has there been an increase, and in each case only slight, whereas in all the others, and in all the county boroughs, the mortality has decreased, in some areas very largely, as, for example, by 34.6 and 32.6 per cent. in the counties of Cardigan and Carmarthen respectively, and 20.3 per cent. in the county borough of Swansea. The puerperal mortality rate in Wales was 5.75 per 1,000 births, compared with 5.91 for 1932, but infant mortality swung the other way, being seventy-four as compared with sixty-nine. Midwives attended 93.5 per cent. of the total births registered (73.6 per cent. as midwives and 19.9 per cent. as maternity nurses). It is mentioned that eight authorities in Wales have now made arrangements in their maternity and child welfare schemes for giving advice on contraceptive methods.

CLEAN RECORD OF NATIONAL INSURANCE PRACTICE

The delinquencies of insurance practitioners, of which much has been heard in the past (although they were never considerable when the magnitude of the service is borne in mind) are reaching vanishing-point. A few further figures, as they carry so admirable a moral, may be given. There were in England in 1933 some 15,500 doctors engaged in insurance practice, and the number of insured persons entitled to benefit was over fifteen million. Yet in only seventy-two cases (in the previous year the number was 109) was remuneration withheld on account of transgression, and the amount withheld—namely, £455—compares with £1,015 the previous year. The offence in eight of the cases was negligence, as defined by the regulations; in forty it was failure to keep or return proper records, or furnish required information; in fifteen it was infringement of certification rules; and in six the improper charging of fees. In two cases the doctor was absent from his practice for more than a week without notification, and in one other case there was an irregular issue of both prescriptions and certificates. Only one case came forward during the year on the representation of the insurance committee that the continuance of the practitioner's name on the list would be prejudicial to the service; this case had not been decided when the year ended.

In Wales there is a similar story. The 923 insurance practitioners in the principality accounted between them for no more than twenty-five breaches of the terms of service, for which amounts from £1 to £10 were withheld, and in no case was any representation made as to removal from the list. Similarly with excessive prescribing, just under sixty million prescriptions were issued in England during the year (the increase of 6 per cent. on the year before is attributable to influenza), and the regional medical officers paid 914 visits to doctors whose prescribing appeared to call for explanation, but either the explanation was satisfactory or a hint in time saved proceedings afterwards, for only two cases proceeded to penalty. Another remarkable instance of accord is that in every one of the 990 cases in which the question of range of medical service arose the local medical committee and the insurance committee were in agreement—in forty-nine cases that the service was, and in 941 that it was not, within the scope of medical benefit.

The *International Quarantine Directory*, published by the International Health Office, Paris, is a volume of over 1,000 pages, which contains information from one hundred countries, comprising almost every seaport in the world of any importance. It represents the second edition of the *Quarantine Annual*, which was published in 1930 on a smaller scale, and contains details of the sanitary services of the various ports; the methods ordinarily adopted in the case of arrivals from infected areas; the ports designated to undertake deratization and certification, and the actual work undertaken in this respect; ports which are open to infected ships; and the special arrangements made between individual countries in order to facilitate the working of the International Sanitary Convention of 1926. An English translation of the official French edition of the *Directory* is now obtainable from the Ministry of Health, price one guinea, post free. While it will be of special interest to port sanitary authorities and medical officers, it should also be found useful by shipping companies, masters of ships, and ship surgeons, who will be glad to have information conveniently to hand on port sanitary dues, costs of fumigation, quarantine anchorages, boarding stations, arrangements for medical treatment, and the various other matters relating to the health organization of the various ports at home and abroad.

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"CLOSED" ANAESTHESIA

When during the later years of the last century the work of Clover and others demonstrated the markedly increased safety during administration of ether over chloroform, it was the common practice to employ methods which involved rebreathing to a greater or less extent, and this was termed "closed," in contradistinction to "open," anaesthesia. The "closed" method was evolved very largely in connexion with a preliminary nitrous oxide induction; and as oxygen was then seldom, if ever, introduced along with the nitrous oxide, it was always necessary to limit the amount of rebreathing so as to avoid the asphyxial element, and to admit air at frequent intervals into the closed chamber whose contents the patient was respiring. Although at the time the effects of carbon dioxide in stimulating the respiratory centre had not been fully studied by physiologists, in practice this result was attained by accumulation of the patient's own carbon dioxide in the Clover bag, and this partly contributed, in all probability, to the popular esteem which the method attained. In the early years of the twentieth century there was a swing of opinion towards "open" methods of administering ether, in which the rebreathing element was reduced to a minimum, and about the same time the work of Hewitt and many others drew attention to the great value of nitrous oxide with oxygen, which also was usually administered by methods devoid of any intentional rebreathing. Both these popular methods came into favour because they had definite advantages, of which increased safety for the patient was the most obvious and the most important; but they are both rather expensive by reason of the large consumption of ether, or nitrous oxide, or oxygen which is entailed.

In a paper read at the recent Bournemouth meeting of the British Medical Association, and published this week at page 339, Dr. W. B. Primrose sets up a new canon of "closed" anaesthesia, which differs a good deal from the conceptions of Clover's day. His definition draws attention to the economy which results by making the patient inspire over and over again a relatively small quantity of anaesthetic vapour, kept constantly in a life-supporting condition. This proviso is ensured by special treatment of the gases in the closed system, by which the anaesthetic gas is recovered in a state of purity for reinhalation. This would be impossible if in the process of producing anaesthesia the drugs used underwent any change in the metabolism of the patient. As regards ether, nitrous oxide, and oxygen, this is not the case: they are excreted through the lungs unchanged, and can therefore, if collected, be used over again and so *ad infinitum*. The ingenious apparatus devised by Dr. Primrose for this purpose, and the way in which it is worked, are described in his paper. The description may remind some London anaesthetists of a cartoon which has long adorned the anteroom to the operating theatre of a well-known nursing home, depicting the anaesthetist of the future as a bored technician holding an oil-can in one hand and a lump of cotton-waste in the other, lolling against a complicated engine of dials, cranks, and levers: but actually this machine is of fairly simple construction. It obviously needs scrupulous attention to its working, but will not on that account fail to obtain careful consideration and trial at the hands of those interested in new developments in anaesthesia. In particular, the details of the methods employed to absorb from the closed system as much of the patient's own exhaled carbon dioxide as is deemed desirable by the administrator will receive close attention; and next after that the packing of the pharynx which is necessary to ensure that the "closed" system is really closed. Dr. Primrose realizes what some inventors of new procedures in medicine are apt to forget—namely, that the only just criterion of his method is the results of putting it into practice. He records his own experiences, as far as he has at present got with his researches; and he asks for an extended trial before a verdict is finally passed upon the usefulness of his machine. Clearly, great economy in the use of anaesthetic drugs is one of its advantages, and it is claimed that a greater steadiness of anaesthesia is also attainable. The metabolism of the patient, it is stated, can also be very carefully studied, through changes in the amount of oxygen intake and by watching the pressure gauge: the earliest commencement of overdosage is easily detected.

One passage in the paper raises issues highly interesting in themselves, but requiring much research before an answer can be given. The author notes that "relative overdosage"—a phenomenon long familiar to anaesthetists—which means, in a sentence, that a given saturation of the blood by anaesthetic agent produces a deeper level of anaesthesia in the later than in the earlier stages of an administration, occurs much more noticeably in nervous than in stolid patients. Dr. Primrose believes that in the latter type a larger proportion of the drug used is absorbed into the blood. Here, it would seem, lies ready to be explored a new field for research, if this view turns out after investigation to be well founded. Clearly, if the bloods of different individuals absorb, under similar conditions, differing amounts of vapours supplied to them there must be some physical differences between these bloods. If at the same time it can be shown that the classification of such bloods coincides, even roughly, with a classification of the temperament (which is merely reaction to environment) of the individual, new light might well be thrown both on mental health, on mental disorder, and on haematology. It would be premature and unwise to say more; but a vista for further research is patent to all.

HYPERPITUITARISM AND GRAVES'S DISEASE

The nature of exophthalmic goitre, first observed by Caleb Hillier Parry in 1786 and described by Graves in 1835 and von Basedow in 1840 and by others, has been regarded in various lights ; at first as a cardiac disorder or neurosis, then as an affection of the nervous system, a view endorsed by Grainger Stewart and G. A. Gibson and by Gowers in 1893, the year in which Greenfield gave the first convincing account of the characteristic microscopical changes in the thyroid. The thyroid origin had been previously advocated, especially by Möbius in 1886, and explained as due either to an excess of the normal secretion or to a secretion abnormal in quality (dysthyroidism), a discussion still going on, although there is not any proof of the existence of a thyroid secretion different from the normal. In this century H. S. Plummer has restated the dysthyroidism thesis, and the case against it has been clearly put forward by Harington,[1] who also discussed with scientific caution the rather widespread belief that the histological changes in the thyroid are not primary but the result of some as yet undetermined factor or stimulus. Among the possible underlying causes which have received attention and a considerable amount of experimental investigation are: (1) inadequacy of the adrenal cortex and the resulting loss of inhibitory influence believed to be thus exerted over the activities of the thyroid ; and (2) overactivity of the anterior lobe of the pituitary, and so an excess of the thyroid-stimulating principle called by Max Aron thyréo-stimuline, and now more generally known as the thyrotropic hormone. Experimental injection of an extract of the anterior pituitary has been found to produce in the cells of the thyroid the hyperplasia of the Golgi apparatus characteristic of Graves's disease (Krogh, Lindberg, and Okkels[2]).

Professor Drouet[3] of Nancy has recently published an account of clinical work which points to the conclusions that overactivity of the anterior pituitary is responsible for the changes in the thyroid, and that Graves's disease is a combination of primary hyperpituitarism with secondary hyperthyroidism. It is shown that in a number of cases there was heteronomous bitemporal restriction of the field of vision which was ascribed to slight pressure exerted by an enlarged pituitary on the optic chiasma. Examination of the urine by Collin and Drouet (1933) revealed the presence of the principle, found in the distal portion as well as in the pars intermedia of the anterior lobe, which contracts the pigment cells of frogs. Diminution of the thyréostimuline in the urine of patients with Graves's disease had been previously pointed out by Aron, who suggested that there are two forms of Graves's disease, one solely due to the thyroid, the other, rare, caused by excessive activity of the anterior pituitary ; Drouet, who contests the validity of such a conclusion, discusses the rationale of a fall in the urinary thyréo-stimuline. In a later paper Étienne and Drouet[4] lay stress on the persistence, after thyroidectomy, of the contraction of the visual fields and of the urinary reaction for the melanophor-contracting principle. Further, they record the benefit obtained, in four cases, by *x*-ray treatment alone of the pituitary, not only in the general state but also in special respects, such as a fall in the metabolic rate. The evidence, however, in these articles of structural change in the pituitary in Graves's disease is second-hand, and scanty at that. They recommend treatment of both the pituitary and the thyroid by *x* rays, and of the thyrotoxicosis by Lugol's solution and hémato-thyroidine.

Drouet also discusses the neuro-vegetative syndrome, or para-Basedowism, described by Marcel Labbé and his collaborators,[5] who recognized two constituents in Graves's disease—namely, hyperthyroidism and a neuro-vegetative syndrome which does not respond to remedies potent against hyperthyroidism, but should be treated by sympatholytic drugs, such as the alkaloids of the yohimbine group. This condition may occur spontaneously or follow Graves's disease successfully treated by the established methods, such as thyroidectomy. Drouet, who has found contraction of the visual field and the melanophor-contraction principle in the urine, regards the syndrome as hyperpituitarism without hyperthyroidism. Treatment by *x*-ray exposures of the pituitary also reduced the blood pressure to normal.[6]

[1] Harington, C. R.: *The Thyroid Gland: Its Chemistry and Physiology*, p. 186, London, 1933.
[2] Krogh, Lindberg, and Okkels: *Acta Path. et Microbiol. Scand.*, 1932, ix, 21.
[3] Drouet, P. L.: *Rev. Franç. d'Endocrinol.*, Paris, April, 1934, xii, 101.
[4] Étienne, G., and Drouet, P. L.: *Bull. de l'Acad. de Méd.*, Paris, July, 1934, cxii, 86.
[5] Labbé, M., Villaret, M., Justin-Besançon, L., and Schiff-Wertheimer: Ibid., December, 1933, cx, 730.
[6] Drouet, P. L.: *Bull. et Mém. Soc. Méd. des Hôp. de Paris*, February, 1934, 3 S., xlii, 139.

THE STUDY OF ANIMAL LIFE

At a recent educational conference at Oxford it was contended by the opener of a discussion on biology teaching that the dissection of animals by the pupils was an essential part of such instruction ; and the statement was made that " his own boys began cutting up animals as a regular part of the course at the age of 13." He declared truly enough that " biology was a subject which particularly required a practical method of approach. Immediately the teacher began to talk of a nerve, a cell, or a gland he ran the risk of being completely misunderstood unless the student had seen the objects to which the words referred." It may be doubted, however, whether actual dissection by the student himself during the stage of elementary instruction is necessary to this end, and whether demonstration from a dissection otherwise carried out would not be even more effective. Further, it may be argued with very great force that the consideration of anatomical detail is not the best method of approach to the subject ; and that, just as the demand is becoming more insistent that human anatomy should be taught

to medical students largely on the living subject and not mainly on the cadaver, so it should be the behaviour of living things and the relation of their active functions to their structure that should form the foundation of the study of biology. This thesis is not explicitly stated, but is very strongly suggested by Dr. E. S. Russell in *The Behaviour of Animals*.[1] The book is based upon lectures given at University College, London, last year ; and its object is stated to be " to interest students and other people in the problems of animal behaviour, and to make clear the principles on which observations should be interpreted." Dr. Russell does not, of course, belittle the need for anatomical knowledge or the value of suitable laboratory experiments, but his main points are two: that it is the careful observation and study of animals in their natural environment which is of the utmost value ; and that such behaviour is not to be explained or interpreted as a purely mechanistic or physiological result of a bundle of specific responses to separate stimuli but as arising from the needs of the animal as an entity in relation to situations felt as a whole.

" The animal is regarded as essentially active, not as acted upon, as exhibiting directive activities in relation to its needs and under the guidance of perception, not as an automaton moved this way and that by the direct action of impinging stimuli. . . . The theory that all behaviour can be satisfactorily accounted for as a concatenation of reflexes, conditioned or unconditioned, receives little support from the facts of development. Early behaviour does not arise through the addition and combination of originally separate reflexes. . . . Separate reflexes can be distinguished by analytical artifice, but analysis lets slip the essential thing, the continuity and directness of the action taken as a whole. In the perceptual field, in the same way, we have to recognize a wholeness and unity which is destroyed by physiological analysis."

This point of view and method of approach are set forth with a clarity of statement and a wealth of illustration and reference which make the book not only important in its general thesis, but very helpful as an introduction to its subject.

FUNCTION OF THE SUPERFICIAL OCULAR BLOOD VESSELS

The June and July issues of the *British Journal of Ophthalmology* contain, in two parts, a fifty-six-page illustrated article on " Certain Clinical Features of the Normal Limbus," by Mr. Basil Graves of Bournemouth. The author describes various minute structural features which he has recorded in the past relating to this region of the living eye, the majority of which are only of specialized interest to the ophthalmologist. The article, however, contains an account of certain vascular features which, together with some of the conjectures based on them, may be of much wider interest when considered in conjunction with the fact that the observations were all made on the living human eye. A very detailed account of the capillary blood vessels of the limbus and of the conjunctiva covering the globe is accompanied by various diagrams under a linear magnification ranging from ×28 to ×135. These illustrations show that the " ordered complexity " of the vascular system of the ocular conjunctiva can, in principle, be reduced to multiple long loops springing from the region of both the limbus and the fornix. In the territory between these two sources the loops meet and interdigitate, and here the blood circulation may be seen to hesitate, reverse, or alternate in the direction which it takes in these " zones of equipoise." Each of these loops embodies a fine arterial afferent component—so fine that it can easily be overlooked—in which the blood flow is very rapid, and a coarser efferent channel with relatively dilatory circulation, to which, as the author suggests, the word " venous " should be applied only with reservation: he suggests the term " metabolic vessels " for the efferent components of these loops. At the limbus these long loops have reduced counterparts in the form of shorter and shorter loops—some being so short that they are only stump-like and sessile—accommodated in grooved and crypt-like contours of the basal layer of the surface epithelial cells. The epithelium which separates these conjunctival vessels from the air is only three cells deep, and the author suggests that the vascular system of the conjunctiva has become specialized to form a local primitive superficial " respiratory " mechanism. He mentions an acute affection of the conjunctiva, unrecognized except that it gets labelled " conjunctivitis," and characterized by great dilatation of the metabolic components of the conjunctival vessels, and alludes to a possibility of treating certain surgical and pathological conditions of the eye on the basis of these conjectures. He does not feel that the conjunctival vascular architecture is ideally specialized to facilitate aerial oxygenation of its blood to the fullest capacity, but rather that, among the factors which have contributed to the evolutionary specialization of the design, a partial subservience to this particular function may have contributed to the moulding of the phylogenetic material available. In the interpretation of various features in the conjunctival vessels, the author makes use of observations which he has recorded concerning the behaviour of pathological vascular invasion in the homologous plane of a neighbouring tissue—the cornea—in the course of their living creation. He shows some of the evolutions which vascular afferent-efferent loops undergo in the process of their advance, and, reasoning from these, makes various suggestions as to the correlated significance of features in the normal neighbouring vessels. Thus the arterial and metabolic components of the afferent-efferent conjunctival loops cross one another so frequently in the same relative rotatory sequence as to indicate a significance in this entwined formation, it being suggested that in the course of development these crossings occur when a " reactivation in the process of advance follows upon a transient lull of the ingressive activity," and it seems probable that a determining factor in the direction of " twist " at these crossings lies in a balance between the two opposed factors of intravascular centrifugal force and the enveloping tissue tension. It is emphasized how the underlying factors influencing many of these simple visible processes are beyond present conception. While the article contains much that is conjectural, the hypotheses put forward are based on precisely defined original clinical observations.

[1] *The Behaviour of Animals: An Introduction to its Study*. By E. S. Russell, O.B.E., D.Sc., F.L.S. London: Edward Arnold and Co. (10s. 6d. net.)

CRYSTALLINE CORTIN

The existence of an active hormone of the suprarenal cortex is now well established, and its presence in any given extract can be more or less accurately standardized on the suprarenalectomized dog. The hormone is essential to life, and if administered in adequate quantities to the suprarenalectomized animal the latter can be kept indefinitely in practically normal health. Deficiency of the cortical hormone is the cause of the series of symptoms associated with Addison's disease, and theoretically the latter should be controllable by replacement therapy. Excess of the active hormone (cortin) may be associated with hyperplasia of the suprarenal cortex or with adenomatous (in some cases adenocarcinomatous) new growth. The series of symptoms due to an excess of cortical hormone is in many respects similar to that found in pituitary basophilism (Cushing)—namely, obesity, hirsutism, weakness, amenorrhoea, and hypertension. The analogy with the various derangements of the thyroid gland thus seems to be complete, definite syndromes being associated with hypofunctioning and hyperfunctioning of the cortical tissue. Surgical measures in cases of hyperfunction or tumour of the suprarenal cortex have met with great success in the hands of certain American surgeons. Replacement therapy in cases of hypofunction of the cortex is complicated by the facts that the amount of active hormone in a single animal (beef) gland is very small, and that the process of extraction is still costly. So much is this the case that, in the opinion of the Mayo Clinic workers[1] in this field, " no method of extraction from the gland will solve the financial aspect of the problem." These workers therefore set out to prepare the hormone in a pure form, to determine its composition and structure, and to prepare it synthetically. Three years' work has led to the crystallization of the hormone. After passing through a period in which they thought that their results indicated that the cortical hormone contained a derivative of adrenaline, the authors established that all traces of adrenaline and its derivatives could be removed from the extracts and the effects upon the survival of adrenalectomized dogs still be retained. They conclude finally, therefore, that the cortical hormone cannot contain adrenaline as a part of its structure. After a series of washings and extractions the active principle can be taken up in ether, then in acetone water, then in water. Traces of xanthine are carefully removed, and the hormone is again taken up in ether. Crystallization is carried out from a water solution to which is added sodium bisulphite and saturated with sulphur dioxide. The crystals appear to have the formula $C_{20}H_{30}O_5$, and its properties point to its being an α-hydroxyaldehyde existing in two forms: a monomolecular form soluble in water and having aldehydic properties, and a polymeric form insoluble in water and not possessing aldehydic properties. The authors find that the compound thus obtained will keep suprarenalectomized animals in normal condition, and that the composition is constant, so that they were not dealing with an adsorption compound. Both forms of the hormone appear to have the same physiological activity. It thus appears that we are not far from the realization of the task set themselves by these authors—namely, the identification of the structure of the hormone and its synthesis.

[1] E. C. Kendall, H. L. Mason, B. F. McKenzie, C. S. Myers, and G. A. Koelsche: *Proc. Staff Meetings, Mayo Clinic*, April 25th, 1934.

THE TREATMENT OF FRACTURES IN THE NEWBORN

At a recent meeting of the Section for the Study of Disease in Children of the Royal Society of Medicine, Drs. Eric Pritchard and Jean Smith presented a paper, now printed in the *Proceedings*,[1] which contains some unorthodox views on the treatment of fractures of the long bones in newborn infants. The authors' interest in the matter was aroused by the example of an infant in whom there were more than a dozen fractures, involving the ribs and limbs, where surgical methods of splinting were clearly inapplicable, and yet at the age of 18 months, following entire liberty of movement and general hygienic measures only, with special addition of vitamin D and calcium, there was apparently complete cure, so that no evidence of bony disease was to be discovered clinically or radiologically. As a result of this experience several infants with fracture of the femur have now been treated on similar lines and carefully followed by *x*-ray examination. Usually showing severe degrees of deformity at first, skiagrams have demonstrated the throwing out of abundant callus followed by a straightening of the bone and the gradual appearance of a united, perfectly straight femur without any obvious shortening. In the cases recorded crawling and walking have occurred at the normal expected age, and in a cinematograph film, shown at the meeting referred to above, a child of 18 months was seen walking about actively without any limp. As was pointed out on this occasion Nature has been healing fractures ever since the appearance of man on this planet, and the tissue culture experiments demonstrated in Dr. Ronald Canti's now famous film, include one striking illustration of how a piece of cartilage, taken from an embryo chick, will develop into a perfectly shaped bone under proper nutritive conditions. Dr. Pritchard's essential point is that perfect anatomical reduction is not necessary for complete functional recovery, and the restraint imposed upon the infant by complicated apparatus leads to such restrictions of liberty of movement that nervous irritability and possibly secondary nutritional disturbances may easily follow. The traditional method of dealing with neonatal fracture of the femur is to bandage the thigh up against the abdomen in the " foetal " position. Nursing becomes very complicated in thes circumstances, and it is doubtful whether much is to be gained by the use of the body as a splint. The application of plaster-of-Paris splints to a rapidly growing baby also presents practical difficulties, and if, as is claimed by Dr. Pritchard and Dr. Jean Smith, entire liberty of movement is not followed by shortening, then there seems nothing in favour of retentive apparatus. This is the crux of the matter, and there were certainly some surgical doubts expressed at the meeting on this point. One of the illustrations in the published paper (Fig. 6) would seem to bear this out, but the clinical observers maintain that no shortening is present, nor is there any

[1] *Proc. Roy. Soc. Med.*, May, 1934, p. 935.

limp. The method certainly has the merit of simplicity, and is worthy of more extended trial. Careful *x*-ray control, however, is essential, or the practitioner lays himself open to an obvious action for negligence in which orthodox surgical evidence might possibly triumph over Dr. Eric Pritchard's appearance as an expert witness for the defence!

EFFECTS OF X RAYS ON THE LUNGS

Medical literature contains records of many cases in which the lungs of human beings have been injured by long exposure to the action of *x* rays, conditions such as pleurisy, pneumonia, "Roentgen pleuropneumonitis," and fibrosis of the lung being among those recorded. Engelstad[1] has recently investigated the action of *x* rays in different doses on the lungs of rabbits, and describes in detail the analogous lesions produced thereby. He finds that doses that do no or but slight injury to the skin usually leave the lungs almost unaffected. Doses causing inflammation of the skin lasting up to six weeks produce grave and often fatal disorders in the lungs, such as bronchitis, bronchopneumonia, generalized inflammatory changes, the production of cartilage, and fibrosis, and these may not all have come to an end six months after the exposure to the *x* rays. Still larger doses often produce pneumonia, which may be rapidly fatal or may result in extensive fibrosis. Full histological details of the pulmonary changes are given, and they are illustrated by a number of excellent microphotographs. The pleura is more resistant than the pulmonary tissue, and Engelstad finds that fractionation of the dose lessens the injury done to the lungs.

A TREATMENT OF HAEMOPTYSIS

Haemoptysis in pulmonary tuberculosis may broadly be classified into three types. Associated with an early exudative lesion, and loosely said to be due to capillary congestion, it is often fairly copious, generally single, and never fatal. Caseous lesions causing ulceration of small vessels frequently produce small haemoptyses which are sometimes repeated, and, also, never directly fatal. On the other hand, bleeding arising from the aneurysms of unsupported vessels in cavities are copious, repeated, and not uncommonly lead to death. In all cases, however, the symptom is alarming, injurious to the general condition of the patient, and, particularly in the last group, dangerous because of possible dissemination of the disease. Drugs have little or no effect on haemoptysis, and an artificial pneumothorax may be impracticable owing to bilaterality of disease, to difficulty in determining the side of bleeding, or to the presence of adhesions. Moreover, rigid walls of a cavity may fail to collapse. In a recent article Courcoux[2] describes a method of treatment based on a case reported by Ravena, Benzaquen, and Bibas,[3] who obtained arrest of a repeated and very copious haemoptysis after causing extensive subcutaneous emphysema of the chest following failure to induce an artificial pneumothorax. Courcoux has treated thirty-four successive cases of haemoptysis by injecting 300 to 600 c.cm. of oxygen in a single dose under the skin of the thorax, preferably on the same side as the source of the bleeding—if known. In twenty-five patients the haemoptysis, "often abundant," ceased "immediately and definitely" without recourse to any other form of treatment. In six the injections had to be repeated on several consecutive days in order to obtain a result. The bleeding was unchecked in seven patients (the figures do not appear to tally). The injections, which may be carried out by means of an artificial pneumothorax apparatus, are said to be well supported by the patients, in whom, even when they are ineffective in arresting the bleeding, anxiety is relieved and a "state of euphoria" may even be produced. The method was most efficacious in recent progressive lesions (*poussées évolutives*). No theory is brought forward to account for the beneficial effect, which appears to be found only in those cases in which one would expect the haemoptysis to be in any event a self-limited single episode. It is instructive to note that Pierre-Bourgeois[4] claims, on the basis of a total of five cases treated, to have obtained equally good results by injecting the oxygen subcutaneously in the thigh.

[1] *Uber die Wirkungen der Rontgenstrahlen auf die Lungen.* Von Rolf Bull Engelstad. *Acta Radiologica.* Supplementum xix. Stockholm: P. A. Norsted and Soner. 1934. (10 Swedish crowns.)
[2] *Presse Méd.*, July 4th, 1934, p. 1068.
[3] *Rev. de la Tuberculose*, 1933, i, 405.
[4] *Rev. de la Tuberculose*, 1934, ii, 160.

THE EDUCATIONAL NUMBER 1934

Our next issue, dated September 1st, will be the annual Educational Number of the *British Medical Journal*. Its contents, as in previous years, will include a full account of the requirements of the General Medical Council and of the universities and other licensing bodies in Great Britain and Ireland, as well as information about the opportunities offered by the various medical schools and other teaching institutions, and the fees charged by each. The details given have been revised and brought up to date by the authorities concerned. These sections, the object of which is to furnish a handy guide to intending students of medicine, are supplemented by articles intended for newly qualified practitioners on such matters as post-graduation study in Great Britain, the public medical services, tropical medicine, psychological medicine, and the various special diplomas. The opening article for this year's Educational Number is by Sir Henry Brackenbury; it is entitled "The Training of the Medical Practitioner."

The King has renominated Sir George Newman to be a member of the General Medical Council for five years from October 9th, 1934.

The Harveian Oration will be delivered on Thursday, October 18th, at 4 p.m., before the Royal College of Physicians of London, by Dr. James Collier, whose subject is, "Inventions, and the Outlook in Neurology."

As we go to press we learn that Professor G. Grey Turner, professor of surgery at the University of Durham, has been appointed to the university chair of surgery at the British Post-Graduate Medical School at Hammersmith.

HEALTHY LONDON CHILDREN

THE L.C.C. REPORT

London is a problem of the first magnitude. Nowhere is there such an aggregation of people ; nowhere are there such problems in health ; and nowhere might mistakes or sins of omission be fraught with such disastrous consequences. The report of the School Medical Officer for London,[1] Sir Frederick Menzies, shows what is being done for the betterment of the health of the host of children who are being trained in the numerous schools. The report is a record of almost unbroken successes in every department of school activity. There is no page in it that is not a condensed account of strenuous endeavour and achievement. To the Council and its small army of doctors the work is a great credit, only measurable by those who know what the conditions were among children of these schools thirty years ago. It is convincing evidence of the good that can be done by the earnest, thoughtful, and continuous application of scientific health methods.

PERIODIC EXAMINATIONS

There are some 380 doctors and ninety-seven dentists engaged in the work, many of whom are specialists in their own departments. The work needs to be highly organized and, at the same time, elastic and human, and the association of voluntary agencies is found to be of the highest benefit in this regard. Under the Education Act local authorities must make provision for the medical examination of children at entrance to school, and at such other time as the Board of Education prescribes. Thus there is a routine examination at the ages of 8 and 11. In London there is a further examination in the term before the children leave school. More than 80 per cent. of all children are examined each year. The Council finds there are some disadvantages in the year ages selected, and it is experimenting with examinations at the ages of 7 and 11. Refusals on the part of parents to allow their children to be examined are so few as to be negligible ; there were only seventy-five such last year, and of these independent medical reports were obtained in the cases of twelve children.

NUTRITION AND CLEANLINESS

Unremitting attention has been given to the state of nutrition of the children. The long-continued depression with its attendant unemployment has produced acute anxiety lest the children should suffer. A special inquiry was made of 10-year-old children in schools selected as likely to be those where influences of malnutrition might be manifest. In this group 93.5 per cent. were considered well nourished and 6.5 per cent. poorly nourished. The work was undertaken by a skilled observer, and his findings in this *ad hoc* examination compare very well with the results of general medical inspection.

The general examinations have revealed an excellent maintenance of the high standard of cleanliness. Dirty heads are few, and body vermin are found in only one in a thousand. While bad clothing and bad footgear are distinctly less frequent than formerly, there has been a transfer from the " good " column to the " fair " column of from 1 to 8 per cent. The indications from this survey are that while indigence has been alleviated, things are " tighter " among those above the poverty line, and clothing has suffered to some extent in order to provide sufficient food.

The year was one of overflowing sun ; this, no doubt, contributed to the healthy state of the children. Fewer defects than ever before were reported. Further, the last has been seen, so far as the elementary schools are concerned, of the weakly children of the war.

[1] No. 3054. London County Council. *Annual Report of the Council*, 1933. Vol. iii (Part II), *Public Health*. Report for the year 1933 of the School Medical Officer. London: P. S. King and Son. (1s. 6d.)

DENTAL CARE

There has been a slight falling off in the number of children brought for dental treatment, and this despite the excellent propaganda work of the Dental Board's demonstrations in the schools, which are highly appreciated. A new experimental dental centre has been established in an East End school financed by the Manor Charitable Trust. The work is mainly prophylactic and conservative ; no general anaesthetics are used. The idea of the Trust is to demonstrate that the most efficient and economical method of dealing with the problem of dental treatment is to form a small clinic at each school, where most of the children can be dealt with on the spot. By such means a complete oversight of the whole school with a healthy condition of the mouths is obtained. But even this scheme has not overcome the apathy of the parents and the repugnance of the children to the dental chair!

CHRONIC INVALIDITY

The school attendance department reports each month the names of children who have been absent from school for three months or more on account of illness. The number absent on account of rheumatism, chorea, and heart disease still forms a very high proportion of the total, and proves how largely this group of diseases is responsible for ill-health in childhood, especially among girls. On account of the greater incidence of the rheumatic disease among girls (386 as against 222 boys), the total invalidity of girls to boys is 1,007 to 813. Ringworm, formerly the chief cause of prolonged absence from school, accounts for four cases only, compared with 129 in 1919. This is due to the success of *x*-ray treatment.

EPIDEMICS

Scarlet fever was epidemic in London during the latter half of the year, and this is reflected in the number of cases (11,357) reported. At one centre a number of cases occurred after operation for tonsils and adenoids, despite every care exercised by the staff. Thereafter the children were immunized against streptococcal infection and diphtheria before operation, and no cases either of scarlet fever or of diphtheria have been reported since this procedure was inaugurated.

There were 531 cases of small-pox notified in London in the year, of which 170 were in school children. All cases occurred among unvaccinated children. Facilities for vaccination on the school premises were granted whenever applications were received, and, at the written request of the parents, about 400 children in four schools were vaccinated. The special arrangement, which has now been in force for some years, whereby home contacts of small-pox are allowed to attend school if in a healthy condition has been continued ; contacts are kept under daily supervision.

DIETARY OF BOARDING SCHOOLS

An important section of the report deals with the dietary of children in residential schools and homes. The diet was altered in 1932, and superintendents and medical officers were asked for criticisms after a trial of eighteen months. There were practically no adverse criticisms, but complete unanimity in praise of the diet as a whole. Suggestions for slight alterations were made and adopted. The medical officers all remarked on the improved condition of the children, and the absence of skin eruptions, which used to be so prevalent in Poor Law homes, was especially noted. This is important, as unhealthy skin conditions are associated with a diet which, though ample in bulk, is deficient in quality. One of the Council's consultants made a special investigation into physique, and observed the general improvement in stature during the past year as being especially gratifying, since the children as a whole appeared formerly to be stunted in growth compared with normal children. Full details of the " Standard Dietary Tables " are given in the report.

Hospitals and Council

Special note is made on the arrangements of the school service. It is said that the general care of the children in the London elementary schools is carried on by a social service, consisting of voluntary workers organized in school care committees, assisted and directed by paid organizers. This system prevents the work of medical inspection and treatment and the wider work of general physical care of the child becoming stereotyped and bureaucratized, a fault which might otherwise be difficult to avoid. Friendliness and co-operation with the parents are the keynotes of this service. The teachers, whenever possible, give much assistance, and in many cases it is entirely owing to their help and devotion that the care committee work in the schools is possible.

London is abundantly rich in voluntary hospitals which provide extensive services for the poor, and it has been the aim of the school medical service to work in co-operation with these. In a number of hospitals a member of the Council's Care Committee attends regularly and keeps the hospital in touch with the social services of the schools. This association makes a great difference in the results of hospital treatment.

A warning is attached to the report. Great national disturbances have effects which are both immediate and remote. The remote effects of the war on children born during that period are known. Similarly, though the immediate effects of the prolonged depression appear from a consideration of the massed statistics to be surprisingly satisfactory in comparison with what might have been expected, yet there may have been some undermining of the health of the children which will show itself in insidious ways in the future.

PORT SANITATION AND COMMON SENSE

By a Ship Surgeon

It is generally agreed that in no sphere of human activity is tradition stronger than on the sea. Sailors are everywhere, and rightly, regarded as ultra-conservative beings who cling to old-established ways and customs, and are very slow to adopt new ways of doing things. This attitude of the seafarer has affected those who control him, resulting in the continuation of methods which, it is the purpose of this article to show, are now obsolete.

This obsolescence is particularly marked in the health aspect of ships and ports. Consider first the present basis of port sanitation in regard to an in-coming ship—the bill of health. One can well understand the need for this in earlier times, when means of communication were slow, and ships might visit ports subject to no sanitary control. Nowadays, with almost instantaneous spread of news regarding epidemics, and with universal isolation of infectious diseases, the bill of health, with its archaic phraseology, is surely out of date. Nor is it a case of *one* bill of health. Take the case of a ship proceeding from Liverpool to Palma (Balearic Islands), calling at Gibraltar en route.

The Bill of Health

A British bill of health must be obtained at Liverpool certifying that "Whereas the ship —— is about to proceed over-seas . . . know ye that the plague, cholera, or yellow fever does not prevail in this port, etc." This must be endorsed (for a consideration to his Government) by the Spanish Consul at Liverpool. At Gibraltar another British bill of health must be obtained, and also a Spanish one, issued by the Spanish Consul at Gibraltar, who presumably has knowledge of Gibraltar's public health inaccessible to the British authorities. Moreover, the Spanish Consul must endorse (again for a consideration to his Government) the British bill of health. From this it will be seen that one arrives at Palma with quite a sheaf of much-viséd and stamped documents (hardly looked at, by the way, by the authorities), and all this so that a few healthy innocent passengers may disembark and a few others may have a look round the town. The reader will easily imagine how this process multiplies on itself with visits to further ports. As a source of revenue to the countries concerned it may be valuable; as a method of port—and ship—hygiene I maintain it is cumbersome and anachronistic in the extreme. Indeed, I have never been able to see the object of a bill of health at all, save as a possible reflection on the public health authorities of a port. Suppose plague or cholera *did* prevail in Liverpool. Surely the said authorities would take immediate steps to isolate cases and confine the outbreak sufficiently to prevent ships' crews running any appreciable risk of infection. In any case, what large port is there in the world which has not a permanent isolation hospital containing, it may be, cases of typhoid, small-pox, or other infectious diseases? But no ship is thereby prevented from entering or leaving such a port.

One can envisage here a new system altogether. Medical science knows no frontiers, and small-pox or plague is the same disease at Singapore or Southampton, Bombay or Birkenhead. The Health Organization of the League of Nations, or perhaps preferably the Office International d'Hygiène Publique, placing health officers in every large port of the world, might issue a sanitation card to each ship at its original port of departure, the sanitary condition of each port subsequently visited to be stated thereon by the respective health officer. This may be a Utopian ideal, but it is not beyond the bounds of possibility. By international agreement an excellent system now prevails whereby a seaman suffering from venereal disease can continue his course of treatment by applying at the various clinics established for this purpose in all large ports, the details of each treatment being marked on a card supplied to the seaman and presented by him at each clinic.

Ship Hygiene

Consider now the question of ship hygiene. By long-established custom a ship is still regarded as an infectious thing, either potentially or actually so. This feeling is particularly strong among the Latin races, perhaps for reasons not unconnected with the personal habits of their nationals. A glance at the form to be filled up at any Mediterranean port (for example, Marseilles) will show this. It refers to disinfection of cabins, disposal of the effects of sick persons, deaths, and coffins. To Latin eyes, too, *all* illnesses occurring in a ship appear as infectious disease, an extraordinary attitude which rises to its height in South American ports. I have seen a port doctor at Rio de Janeiro hesitate to come on board on being told that one passenger on board was "seek." Apart from the absurdity of this behaviour, it is a sad commentary on local medical ethics. It is incredible that any British doctor would hesitate to enter a house on the ground of its containing infectious disease.

If ships are such dangerous potential carriers of disease, why, may I ask, is no attention paid to trains and aeroplanes? The Orient Express, on its return journey from Constantinople to Calais, passes through many countries on its way, yet no sanitary control whatever is exercised over the passengers, the staff, or the train itself. It certainly does not obtain a bill of health on leaving Constantinople, hardly to be described, I think, as a very salubrious city, certainly no cleaner than Liverpool. A person, too, sickening for small-pox or yellow fever might well travel from the East to this country by aeroplane; yet, so far as I know, no sanitary control is exercised over aeroplane passengers either.

Surely it is time this absurd attitude towards ships and their inhabitants was dropped. The days are now long past when, *as a matter of course*, a ship returned from an oversea voyage with half or more of the crew dead or dying from scurvy, plague, or small-pox. A modern ship is an eminently hygienic affair, with her regular inspections of quarters and crew by commander and medical officer, her constant washings and cleansings, her exposure to the

antiseptic action of sunshine and ozone, her periodic fumigations of holds, etc. Indeed, she is a much more hygienic affair than many a house is ashore. Moreover, it should be remembered that sailors spend by far the greater part of their lives in ships. It follows that they are liable to almost any of the diseases found in general practice ashore, and that they may occasionally die of one of these, of pneumonia, heart failure, typhoid, or some serious accident.

PORT AUTHORITY AND SHIP SURGEON

May I then plead for a somewhat more common-sense attitude on the part of port sanitary authorities (especially foreign ones) to such illnesses (and possibly, deaths)? After all, the surgeon on board knows at least the fundamentals of his job; indeed, in these days of enhanced status and increased pay for ship surgeons, as like as not he will be found to be highly efficient and trustworthy. (The day of the old-time ship surgeon, rarely sober, whose main duty on board seems to have been that of jester and entertainer, is now past, though he has left a nasty taste in the mouth of the travelling public.) He is therefore quite capable of distinguishing prickly heat from measles, domestic collywobbles from cholera, pimples from small-pox, and biliousness from yellow fever. Do not, therefore—I suggest to port authorities—ask of him that most aggravating of all questions for a ship surgeon, "Have you had any cases of illness on board, whether of an infectious nature or not?" What sort of reply is expected to this question? Are details desired of the bo'sun's lumbago, the carpenter's rheumatism, the commander's indigestion, the fireman's whitlow, the chief engineer's boil, the stewardess's debility, the third officer's cold in the head, the steward's diarrhoea, the A.B.'s bronchitis, etc.? It is inconceivable that the authorities should have either the time or the patience to peruse such a recital, even if their health declaration form gave sufficient room for its insertion. Personally, I decline to attempt a reply to this question, and simply state—"A few cases of minor illness." Nor can I see what possible bearing such maladies can have on the public health of a port or country.

I trust I shall not be misunderstood. The important point at issue is *the early detection of infectious or contagious disease*, and on this the interests of port authority and ship surgeon coincide. I am therefore all for the tightening of regulations and examinations, in so far as these serve this end. But I desire to protest strongly against the *futilities* which are everywhere apparent in foreign ports: the deep suspicion with which every case of minor illness is regarded; the answering of questions which suggest that a ship is necessarily a hotbed of filth and corruption; the needless reduplication of health declarations—for example: Why should a ship be obliged to fill up a health declaration form at both ends of the Suez Canal,* whether north- or south-bound? Why should a ship which has made a complete health declaration at Capetown be required to repeat this at all ports on its way round the South African coast, so that at Durban one may be giving particulars of the illness during the outward voyage of some person who has long ago disembarked and reached his home in the interior of the country? Surely, having made a declaration at Capetown, all that should be subsequently required is notification of any *further* contagious or "prohibited" disease. Why should the same thing occur at British ports, each port authority treating the ship as if she had arrived from, say, Hong-Kong, instead of London or Liverpool, no consideration whatever being attached to the fact that she has already been examined and has received "free pratique" at previous ports of call? It is against such futilities that I protest, and there are many of them.

* This involves answering eighteen questions at Port Said, thirty-three at Suez, some of them quite ridiculous—for example: "Have you picked up anybody or thing [*sic*] during the voyage? If so, where? Give bearings." Imagine a liner stopping to pick up a "thing," and taking bearings on the occasion!

ACCIDENTS IN SEWERS

PRECAUTIONS FOR SAFETY

A report on the precautions necessary for the safety of persons entering sewers and sewage tanks has been issued for official use by the Ministry of Health.[1] It is the joint work of seven representatives of the Home Office and the Ministry, who were appointed a year ago, the chairman being Mr. R. G. Hetherington and the medical members Dr. Thomas Carnwath and Dr. E. L. Middleton. The decision to make the inquiry was reached because of fatal accidents at Upminster and Southend, and because there was no record of an investigation having been made or advice given previously by any Government department. Since then further fatalities have occurred at Northallerton and Coventry. It appeared that while some of the larger authorities issue fairly comprehensive instructions to their employees there is a lack of uniformity in the instructions given, and many local authorities have done little or nothing.

The dangers to be anticipated in sewers and sewage tanks fall naturally under two heads: (1) flooding; (2) gases. In regard to the former, it is agreed generally that bars or chains should be provided at all manholes in sewers, so that they can be fixed across the sewer at the manhole below the point at which any man is working. Gases are grouped into asphyxiating, poisonous, and inflammable. The composition of the air in sewers normally differs little from that of the outside atmosphere, but it may be much modified as a result of stagnation in the sewer due to structural defects, or by the admission of gases or liquids which readily vaporize. Where stagnation occurs the solid matter undergoes fermentation and absorbs oxygen from the air in the sewer. Fermentation or digestion of sewer solids gives rise to very objectionable odours, and if there is little ventilation the evolved gases collect and gradually displace the air, so that the sewer atmosphere becomes irrespirable owing to the reduction of its oxygen content. Of the gases found at times in sewer air due to direct admission, coal gas is the commonest, but acetylene from the decomposition of unspent calcium carbide is occasionally found; both may give rise to explosive mixtures. Of the readily vaporizable liquids that gain access to sewers inflammable wastes from dry cleaning works, etc., are occasionally met with, but petrol is by far the most common, and may cause devastating explosions. Speaking generally, the gases to be feared in sedimentation tanks are those produced in the early stages of the precipitation of sewage solids—namely, CO_2 and H_2S; whereas the gases to be feared in septic tanks are those evolved in the later stages of fermentation—namely, methane (CH_4) and CO_2. The danger of asphyxiation by irrespirable gases can only be removed by adequate ventilation of sewers and tanks. In this country the greatest risk encountered is that of poisoning by H_2S. The first and principal remedy is to prevent the accumulation of sewage or sludge by cleaning out tanks and (where necessary) sewers at frequent intervals.

With reasonable care accidents should not occur. The tests and precautions for ensuring safety are relatively simple and ought to be strictly observed. Before any man enters it, the sewer or tank should be ventilated. Tests must then be made for H_2S (by exposing lead acetate paper for five minutes), for asphyxiating conditions (by a safety lamp), and for inflammable gases (by a detector lamp). All the men should be well versed in the tests and a life-line should be worn by the first man entering a sewer or tank until safety has been established. So long as any man is in a sewer the three manholes (the one entered and that on either side) should be kept open and two men posted at the entry manhole. Smoking and the use of naked lights are forbidden. Rescue kit should be carried by every travelling sewer gang, and kept apart from the tools and ordinary tackle, the man in charge of the gang being responsible that the kit is at hand and in working order. It should include at least two life-lines and one breathing apparatus.

A summary of the committee's conclusions appears as an appendix to the report and would serve well as a model for leaflets to be issued by local authorities.

[1] Accidents in Sewers. H.M. Stationery Office. 1934. (2d. net.)

England and Wales

London Voluntary Hospitals

The achievement of two records is reported in the statistical review for 1933 of the work and finance of the London voluntary hospitals, which has been issued by King Edward's Hospital Fund.[1] The total maintenance receipts reached the figure of £4,000,000 for the first time; the hospitals with surpluses reached the highest number recorded, while those with deficits were the fewest on record, and the aggregate total of their deficits was the lowest. Most of this increase in total income was due to increased receipts under legacies, but ordinary income also rose by £16,000. There was a small decrease of £18,000 from subscriptions and donations, and another decrease of £24,000 in income from investments, owing to the lower rates of interest prevailing. These two decreases were more than offset by an increase of £58,000 in receipts from services, including the grants of the Hospital Saturday Fund. A factor of growing importance that has contributed to the increase under this head is the contributory scheme of the Hospital Saving Association. Expenditure has been steadily rising, but less rapidly since 1930. Although there was a slight increase in 1933 as compared with 1932 the rise in income was much larger. The number of hospitals showing surpluses in the year under review was ninety-eight, the highest yet recorded, and comparing well with eighty-five in the previous year. Those showing deficits numbered forty-seven, again the lowest figure on record in this respect, and thirteen less than in 1932. The aggregate amount of the surpluses was £303,000, against £201,000 in 1932, while the aggregate amount of the deficits fell to £61,000 from £97,000 in 1932. There was thus an increase of income over expenditure of £138,000, which raised the net aggregate surplus from £104,000 in 1932 to £242,000 in 1933, the largest net surplus for ten years. The general conclusion is drawn that, while the deficits at particular hospitals form a serious problem for those hospitals, they are not typical of the general tendency of hospital finances down to the end of 1933, but are due to more or less exceptional circumstances. The bed complement increased by 190 to 17,340 during the year, making a total increase of 970 since 1929. The total capital expenditure on buildings and equipment rose from £577,000 in 1932 to £582,000, a far lower figure, nevertheless, than those of 1929 to 1931, and indicating one of the effects of the still prevailing financial stringency. Several hospitals have been compelled to defer their appeals for building schemes. Yet it is clear that the work of the voluntary hospitals in London continues to grow both in scale and in quality, as a result of the progress made in curative medicine and surgery, and that in the aggregate the receipts from patients and the general public have kept pace with the increased maintenance expenditure. There has also been issued a summary[2] of the report of the committee appointed to inquire into out-patient methods at London hospitals as affecting the suitability of patients and the time of waiting. The main recommendations are: that hospitals should be encouraged to develop the consultative side of their out-patient work; that, subject to certain safeguards, non-urgent minor cases should be referred after the first attendance to suitable agencies which provide general practitioner treatment; and that various time-saving methods of procedure or improvements in accommodation should be studied by hospitals with a view to action where appropriate. It seemed to the committee that part of the waiting was unavoidable with large populations, but that the treatment of an excessive number of minor cases was definitely handicapping the dealing with major cases. It was thought also that improvement was possible as regards the procedure concerning doctor's letters and hospital replies. The question of the fixed time for arrival was commended for more concentrated study. The committee suggested that these recommendations should be so applied as to promote the discovery and adoption of a common policy, while maintaining the individuality and freedom characteristic of the voluntary system. It was added that the King's Fund should consider to what extent it could help in getting the recommendations adopted by making available the detailed information accumulated during the inquiry.

[1] King Edward's Hospital Fund for London, 10, Old Jewry, E.C.2. (1s., post free 1s. 3d.)

[2] King Edward's Hospital Fund for London. (1½d. net, post free).

Scotland

Dental Conference in Dundee

The fifty-fourth annual conference of the British Dental Association, held at Dundee from August 7th to 9th, was attended by some 250 delegates, who received a civic welcome from Lord Provost W. H. Buist and a welcome from the University of St. Andrews, conveyed by Professor D'Arcy Thompson. Dr. W. Graham Campbell (Dundee), who was installed as president, said that the Dundee Dental Hospital had been opened in 1914 to make dental services available to the poorer classes of the city, and a few years later a dental school was founded in association with St. Andrews University. This was the only Scottish University up to the present time to provide courses and grant a diploma in dental surgery (D.P.D.), and the speaker, as dean of the school, had received inquiries regarding it from more than eighty dental surgeons holding public appointments in Britain and overseas. It was intimated that the next annual meeting would be held in Plymouth, and Mr. Sydney D. Venning (Plymouth) was elected president for 1935, with Mr. William Guy (Edinburgh) as vice-president. Professor John Anderson of the chair of surgery in University College, Dundee, addressing the conference on the subject of dental practice, said that the dentist had a wider duty to the community than the mere repair of teeth, for he often had the opportunity of detecting at an early stage serious diseases of the mouth or throat. He instanced the case of a young professional football player who, as the result of actinomycosis, had become quite unable to open his mouth. After teeth had been extracted to enable him to be fed, and a course of radium treatment had been administered, complete recovery had taken place and he had been able to continue his professional career as a player of first-class football. The speaker had reviewed 1,250 cases of cancer of the mouth in Dundee, of which 84 per cent. were in men and 16 per cent. in women; among associated factors in causation had been tobacco, chronic infection, rough teeth, and alcoholic excess. It should be recognized by the public that cancer of the tongue was usually preceded by some simple condition, such as dental ulcer, which might be readily cured. Mr. Grantley Smith, municipal dental officer, Bermondsey, contributed a paper on municipal dentistry, in the course of which he said that to make dental benefit a statutory one would go a long way towards solving the problem of adolescent dental treatment. He pointed out that the British Medical Association recognized the necessity for an efficient dental service, but while that Association based medical services upon private practice, dental services were widely different, and the speaker believed that treatment centres would of necessity play a large part in dental services to the industrial public. On the

last day of the conference a discussion took place regarding the anaesthetic of choice for dental surgery. Dr. R. R. Macintosh said that the induction of anaesthesia by means of barbiturates had simplified this problem for dentists, but he did not consider that this should tempt the operator to give his own anaesthetic. Mr. I. S. Spain (Norwich) said that in time nitrous oxide with oxygen would probably displace all other dental anaesthetics; for this, however, a skilled anaesthetist was essential. Mr. S. F. St. J. Steadman (London) said that he had found difficulty in persuading patients to avail themselves of a skilled anaesthetist, for the patient commonly had faith in his family doctor as the anaesthetist, and the dentist could not venture to say anything against this. A presentation of his portrait, the work of Mr. Leslie Kinnier (Dundee) was made to Dr. Graham Campbell by past and present students of Dundee Dental Hospital and School, and in making the presentation Mr. William Boyd, president of Dundee Dental Hospital, said that, but for Dr. Graham Campbell and his brother, Dr. Norman Campbell, there might never have been a dental hospital in Dundee, so that it was fitting that this presentation should take place on the twenty-first anniversary of the hospital's foundation.

Ireland

Health Progress in Belfast

Taking as an illustration the almost complete eradication of enteric fever from the county borough of Belfast as the result of careful attention to the water supply, the water-carriage system, and the steady abolition of ash-pits, Dr. C. S. Thomson, medical superintendent officer of health, in his annual report for 1933, surveys the present position generally, and indicates lines on which similar advances might be made in the future in other directions also. The immunization of toddlers against scarlet fever and diphtheria could, he remarks, be organized as an effective safeguard of health if the necessary additional medical assistance could be provided. The housing question is being carefully investigated. There are about 97,600 houses in the city, and in 1933 over 19,500 house-to-house examinations were made as a routine, with 48,000 reinspections, and more than 24,000 for specific purposes. Many houses must be demolished, but this cannot be done until a sufficient number of suitable houses are provided for their inhabitants, to be let at not more than 6s. a week. But bath accommodation could not be supplied at such a figure. Many of the houses so far built are too far from the centre of the city, and their rents are too high. Dr. Thomson enumerates various faulty steps which must be avoided, and expresses the hope that within the next five years it will be possible to make a clean sweep of the various insanitary areas. There are now fourteen weekly infant welfare sessions as compared with six in 1930, and nine municipal ante-natal sessions, three more than in 1932. While continuous supervision is very desirable for women during pregnancy, this cannot be secured satisfactorily by laying stress on the possible difficulties and dangers. What is wanted is the creation of a general feeling that such supervision is a natural and sensible procedure. Such an advance in the education of the public requires the more active co-operation of health associations and societies such as women's institutes and guilds. In this educational effort the most important part should be played by the personal guidance of the medical practitioner, the midwife, and the health visitor, and Dr. Thomson suggests that special attention might well be paid to this subject in the training of the midwife and in her post-certificate instruction. There has been a gratifying response to the clean milk campaign, and the standard of the samples examined has much improved. Dr. Thomson remarks that the safest kind of milk is not yet available to the public—namely, milk produced under licence from tuberculin-tested herds, and subsequently pasteurized. He adds that, so far as Belfast is concerned, both Grade A (T.T.) and pasteurized milk can be drunk with a fair degree of assurance. A most successful baby week was held in June last year, thirteen years having elapsed since the previous one. The attendance neared a total of 30,000. The total cost was £500, of which £300 was met out of small rent charges made for trade exhibits of a strictly health nature.

Appointment of County Medical Officers of Health

At the last meeting of the Leitrim County Council a letter was read from the Department of Local Government and Public Health with reference to previous correspondence, pointing out that, in pursuance of Section 21 of the Local Government Act, 1925, it was incumbent on the Leitrim County Council to appoint a county medical officer of health. The necessity for the employment of a whole-time sanitarian to reorganize and develop the public health services in the county had become urgent, and was emphasized by the serious outbreaks of infectious disease which had recently occurred in certain districts. Moreover, the need for the organization of a system of school medical inspection in the county was generally recognized. That service was dependent on the appointment of a county medical officer of health. Experience in counties in which that service was in operation had shown that a large proportion of school children were suffering from dental defects, enlarged tonsils or adenoids, defective vision, and certain other physical deformities, the early detection and correction of which would obviate a considerable amount of ill-health in after-life. The provision of school medical service was therefore an insurance against sickness in the later ages, and the cost of that service would be amply repaid by the increased health of the school children and of the community in general, and by a reduced expenditure from the rates on the provision of institutional and other treatment. In this connexion it was explained that the fears expressed by some local authorities that the cost of the county medical officer of health system would be excessive had proved to be unfounded. The experience gained in the eighteen counties in which this service had been operating for some years demonstrated that when the recoupment from the State grants was taken into account the cost of this service to the rates did not on an average exceed one halfpenny in the pound on the valuation of the counties concerned. Having regard to the foregoing circumstances, and in view of the fact that similar officers were now functioning in neighbouring counties, the Minister requested that the county council would forthwith take the necessary steps to appoint a county medical officer of health for the county. The requisite preliminary procedure consisted of: (*a*) fixing the terms of remuneration for the position, which should not be less than £800 per annum, with vouched travelling expenses; and (*b*) obtaining from the Board of Health a formal resolution assigning to the county medical officer of health the duties of school medical officer, and allocating a proportion of the above-mentioned total remuneration, say one-half, to the duties of school medical officer, which portion of the remuneration would be eligible for recoupment from the State grant. It was requested that the decision of the council in the matter might be conveyed to the Department by letter immediately after the meeting at which the question was discussed. After a long discussion the matter was adjourned.

Mental Hospitals in the Free State

Dr. D. L. Kelly, inspector of mental hospitals, in the course of his annual report, gives the following information. The number of insane persons under care on December 31st, 1933, in public and private establishments was 20,427. This number does not include insane persons maintained at home by relatives or other guardians, with the exception of such as are under the control of the Chief Justice, or are in unlicensed houses and have been notified to the Department, in pursuance of Section 37 of the Private Lunatic Asylums (Ireland) Act, 1842. Voluntary boarders residing in private mental hospitals are also excluded from the total number. Of the total number under care on the date mentioned 89.3 per cent. were in the district and auxiliary mental hospitals, 4.7 per cent. were in private mental hospitals or in single care, 5.4 per cent. were in Poor Law institutions, and 0.6 per cent. in the State Criminal Lunatic Asylum. The distribution of the sexes was 52.1 per cent. males and 47.9 per cent. females. The changes which took place in 1933 may be summarized as follows: The number in the district and auxiliary mental hospitals increased by 407, the number in Poor Law institutions decreased by 149, the number in private mental hospitals decreased by twelve, the number in single care in unlicensed houses decreased by six: there was no change in the number in the State Criminal Lunatic Asylum. There was an increase of eighty-seven in the number of male and of 153 in the number of female patients under care. Under the Lunacy Acts the Saorstat is divided into eighteen districts. In sixteen districts there is one district mental hospital only. The daily average number resident in 1933 in all these hospitals was 18,164 (9,667 males and 8,497 females). At the end of 1933 the numbers had increased by 1,278 compared with the figures for December 31st, 1915. The number of admissions during the year was 2,703 (125 more than the corresponding number in 1932). In 1933 there was an increase of ninety-two in the number of first admissions, and an increase of thirty-three in the number of readmissions. First admissions were equivalent to 71.9 and readmissions to 18.4 per 100,000 of the estimated population (2,992,000). The total number of patients discharged in 1933 was 1,295. Of these 972 were discharged recovered. The percentage of recoveries on the admissions was 33.2. The numbers relieved or not improved on discharge totalled 323. The total number of deaths was 1,091, which is sixty-nine fewer than that in 1932. Of the total number seventeen (1.7 per cent.) were returned as due to general paralysis of the insane, 200 (20 per cent.) to pulmonary tuberculosis, thirty-six (3.6 per cent.) to epilepsy, and thirty-two (3.2 per cent.) to malignant disease and other tumours, excepting those of the brain. The highest death rate was in Limerick Mental Hospital, where it was 8.3 per cent. of the daily average number resident. The lowest was 4.1 per cent. in Sligo. The general death rate was 5.5 per cent.

The fourth conference of the International Association of Preventive Paediatrics (Medical Section of the Save the Children International Union) will be held at Lyons on Thursday and Friday, September 27th and 28th, 1934. The subjects to be discussed are: (1) the prophylaxis of malaria in children—Professor Cacace (Naples), Professor Gillot and Dr. Sarrouy (Algiers), and Dr. Barclay Barrowman (Batu Blah, Federated Malay States); (2) the prophylaxis of rickets and convulsions—Professor Monrad (Copenhagen), and Professor Rominger (Miel). Those who desire to be present at the conference and to take part in the discussions are requested to communicate with the secretary of the I.A.P.P., 15, Rue Lévrier, Geneva

CORRESPONDENCE

Is High Blood Pressure a Risk?

SIR,—I am a surgeon. I am tempted to say with Lord Moynihan that I am a physician doomed to the practice of surgery. Recently, being concerned with the maladies of a patient a little over 60 years of age, I thought it right before operating to take the opinion of a physician upon the question of blood pressure. The highly intelligent patient, being interested and incredulous, suggested that we should consult at least two distinguished cardiologists and compare their results. We did so. The physicians chosen for our experiment were men renowned in the profession in this country; for one we may even claim an international repute. The readings given by the two experts, using apparently identical methods and apparatus, within a period of one hour, in an unemotional patient, varied to the extent of 30 mm. in systolic and 18 mm. in diastolic pressures.

Can anyone tell me if blood pressure readings are of any real value; and, if so, of what value? Textbooks are almost silent; experts vary in opinion and advice; and most of us are ignorant, sceptical, or both. I am familiar with documents published by American insurance companies; but I am not aware of any substantial contribution to thought or to literature in this country since Sir Clifford Allbutt's and Dr. Batty Shaw's discussions before the war. Is there any English evidence available to show whether a high blood pressure involves an added risk to life or health; or are we once again the victims of tradition, hearsay, or prejudice?

Every week as I incompetently play my round of golf I watch the highly accomplished performance of two rounds by a friend whose blood pressure has not been known to fall below 285/170 in the last ten years; and one of the most eminent of my professional colleagues frequently repeats to me a statement I first heard him use during the war: "I feel a worm if my systolic pressure falls below 200." Only this week I have performed, without the slightest anxiety, two major abdominal operations upon patients whose blood pressures were over 250/160. Is it possible to provoke an Anglican authority (if there be one) into speech?—I am, etc.,

August 20th. M.S., F.R.C.S.

Action of Ultra-short Waves on Tumours

SIR,—In a preliminary note communicated to the Zurich International Conference of Radiology Dr. Reiter claimed that

> "a limited wave-length with its maximum at 3.4 m. had the effect of destroying tumour cells if applied with a certain dose, a definite number of times, and also at definite intervals. Other wave-lengths under the same conditions did not produce this effect. The destruction of a tumour under these conditions is very often attended by a certain amount of destruction of surrounding tissues."

Crabtree and Cramer (1933) found that it was possible to increase the sensitivity of cancer cells to radium by chemical or physical means. The action of a small radium dose only able to slow down the growth could be converted by the action of these means into a total destruction. Unfortunately, the substances and methods by which these effects were obtained by these authors are such as to make their use in human therapy impossible. As the effect of ultra-short waves can be applied in human therapy, Dr. Reiter has investigated the combined effect of a weak dose of ultra-short waves and a weak dose of γ-radiation on human cells.

In collaboration with Dr. W. Cramer, at the Imperial Cancer Research Fund Laboratory, a mouse tumour was first treated with a weak dose of ultra-short waves; then the animal was killed and the treated tumour removed and cut into thin slices. Half of these were treated *in vitro* with γ-radiation equivalent to 55 mg. radium element for three hours. A normal untreated tumour was also divided into two parts, one treated with the same dose of radium and the other kept as control for testing the normal growth. Small pieces of each of these four groups were then inoculated into eight mice and the growth of the tumour charted. The action of the combined treatment was then investigated independently from effects on the blood circulation. It was found that with a weak dose of ultra-short waves which did not damage other tissues and which did not by itself produce any change in tumour growth, when combined with the radium dose which by itself was ineffective, the two together prevented growth of the tumour.

In a second series of experiments carried out at the St. John Clinic and Institute of Physical Medicine the growth of Jensen rat sarcoma tumour in rats was investigated (1) when treated with a weak dose of ultra-short waves, (2) with this plus a weak dose of radium, and (3) with radium only. Here again some evidence was obtained that a preliminary treatment with ultra-short waves made the tumour susceptible to radium, either agent being ineffective in itself, and the dose of ultra-short waves being too weak to cause serious injury to normal tissues.

In regard to specific action Dr. Reiter, in the Clinic laboratory, has shown that, taking a dose (1) of 3.4 m. ultra-short waves, (2) of 4.5 m. waves, the dose being measured by thermometric means, the former prevents tumour growth while the latter does not. Given a greater dose the 4.5 m. waves may be effective. Waves shorter than 3.4 m. have not so far been tested. The 3.4 m. waves are effective when cooling is carried out so that there is no evidence of rise of temperature of the tumour as a whole to a degree which in itself would be lethal. Further investigation obviously is needed.—I am, etc.,

LEONARD HILL,
General Supervisor of the St. John Clinic.

Aug. 20th.

Thrombosis of the Penis

SIR,—Mr. Clifford Morson's distinction between true priapism and penile thrombosis is most valuable and not generally recognized. He refers, however, to penile thrombosis in leukaemia in a manner which suggests doubt as to its actuality. A good summary of the literature of this condition is given by H. Hirschfeld in Schittenhelm's handbook of diseases of the blood (Berlin, 1925, vol. i, p. 327). There are over thirty papers on the subject in relation to chronic myeloid leukaemia. In the same textbook reference is made to its rare appearance in acute lymphatic leukaemia (p. 391); but it is always open to question whether these are not in fact acute cases of myeloid leukaemia.

I have myself seen one case of penile thrombosis in chronic myeloid leukaemia: it was the first symptom of the disease, and persisted for about fourteen days, reacting eventually to *x*-radiation of the spleen and penis. The patient was thereafter impotent, and died two years later of leukaemia. Most pathologists who see a large number of cases of myeloid leukaemia have seen it at some time. Venous thrombosis, involving the femoral or saphenous veins, is exceedingly common in this disorder, and the splenic infarcts, which are practically invariable, are of this nature; it is not therefore strange that the corpora cavernosa should thrombose. When complicated by frequency and strangury (as in the case seen by me), owing to passage of urate gravel from the increased purine metabolism, the condition is exceedingly distressing.

By a coincidence there was in the ward at the same time a case of priapism following a war-time bullet wound of the spine. The patient made an application, which was not successful, for an increased pension owing to his disability.—I am, etc.,

R. J. V. PULVERTAFT.
Westminster Hospital, S.W.1, Aug. 16th.

SIR,—I have read with interest Dr. Parkes Weber's letter (*Journal*, August 18th, p. 329) with reference to my article on thrombosis of the penis (*Journal*, August 11th, p. 249). It is important to know what was the subsequent history of his two cases of "persistent priapism" due to myeloid leukaemia.

It is my experience that when the thrombosis is due to arterial disease impotence follows, though sexual desire is unaffected. Your correspondent sees no reason why these cases should not be classed under "persistent priapism." If he will read my article again he will, I am sure, accept my view that this is a wrong description. Priapism is a condition which simulates the organ when sexually excited. In thrombosis of the corpora cavernosa there is no enlargement of the glans penis, and therefore the condition is not one of priapism.—I am, etc.,

CLIFFORD MORSON.
Kingston Gorse, Sussex, Aug. 19th.

Haemorrhage from Peritonsillar Abscess

SIR,—Professor J. B. Dawson's letter on the above subject (*Journal*, August 11th, p. 284) recalls a similar case which occurred in my practice, and which is, I think, worth recording from the point of view of treatment.

A very large fat man (he weighed 17 st.), aged 38, a victim of nephritis and emphysema, developed a left-sided peritonsillar abscess, which was incised by one of my colleagues. Bleeding recurred at intervals in spite of every effort to control it, and had reached a highly dangerous stage by the time I saw him (October 16th, 1926). The patient was very white, weak, and apprehensive from continuing loss of blood. The pharynx was almost closed by bulging clot, some of which was protruding from the faucial incision, from which came a steady trickle of blood. As a general anaesthetic was out of the question the neck was infiltrated with novocain and the external carotid doubly ligated at the site of election. As in Professor Dawson's case, a mass of swollen lymph glands required removal before the artery could be exposed. The efficacy of this procedure was immediately demonstrated by the fact that my colleague enlarged the faucial wound and cleared out the mass of clot without any sign of recurrence of the bleeding. The patient made a rapid recovery.

As a result of this experience I am in entire agreement with Professor Dawson as to the wisdom of tying the external rather than the common carotid when confronted with dangerous bleeding from a peritonsillar abscess, whether spontaneous in origin or following incision.—I am, etc.,

CHARLES MACAULEY.
Dublin, Aug. 15th.

The Swab in Diphtheria Diagnosis

SIR,—I write lest certain letters you have recently published should be taken seriously as suggesting that swabbing of suspicious throats can be excusably omitted.

In the two districts of which I am medical officer of health we provide laboratory facilities and also pay the doctors a fee of five shillings for every swab they send for examination. We let it be known we want every

sore throat swabbed. After ten years' experience of this the following facts emerge.

1. The incidence of the disease has been halved.
2. The deaths have been halved in one district and none have occurred in the other.
3. Many swabbed throats in which no clinical resemblance to diphtheria was present are found to be diphtheritic, and others which appeared quite characteristic are found to be negative.

The cases discovered unexpectedly to be diphtheria are removed to hospital, and other persons they might have infected are saved—hence the diminished incidence referred to. The apparently certain cases which prove negative are not removed, and so far no diphtheria has followed their remaining at home.

I am quite certain that in many early cases there is no clinical sign by which anyone, however great his experience, can diagnose diphtheria. Disappointment with swabbing will be found in districts where, in the absence of any encouragement to assist the public health authority, the doctors, or some of them, only swab cases they suspect are diphtheria. It is among the cases in which no one—not even Drs. James and Sanctuary—would suspect diphtheria that the ambulatory and therefore dangerous case is found.

As it is certain that any sore throat may be diphtheritic, and therefore every case is a "doubtful case," it is obviously impracticable to have, as suggested, every case examined by an expert, and even if this were possible no expert opinion is of any value in a really early case. It is also impracticable to put every sore throat into hospital or to give every patient suffering from sore throat 20,000 units of antitoxin.

It is not, however, impracticable to swab every case, and I have proved its efficacy.—I am, etc.,

Altrincham, Aug. 20th. ARTHUR T. BLEASE.

SIR,—In his devotion to scientific orthodoxy Dr. Alistair French (*Journal*, August 18th, p. 332) has quite missed the main point of my original letter, which is that the swab is an unreliable guide, even in cases which are, or ought to be, clinically obvious, and that many lives are lost either because of the faith placed in the swab or because of the delay involved in taking one. If Dr. French doubts this, let him ask the superintendent of any large fever hospital.

As to carriers, Dr. French should remember that, for every supposed carrier whom he succeeds in isolating, there are many more at large who are probably doing a useful work in helping to immunize the susceptible population. Further, a report that organisms morphologically resembling Klebs-Loeffler bacilli are present in a culture is not a sure indication that the person concerned is a carrier or disseminator of virulent organisms. In certain circumstances the swab can give invaluable information, but the present policy is often dangerous to the patient and misleading to the practitioner.—I am, etc.,

Isolation Hospital, Romford, Aug. 18th. E. JAMES.

SIR,—I agree with Dr. French that the throat swab is sometimes the only means of knowing that the patient is a diphtheria carrier and therefore a source of danger to others. There can be few general practitioners of any experience who do not recognize a typical diphtheritic throat when they encounter it.

It is the doubtful case that requires a confirmatory swab. Generally these doubtful cases are not very ill—that is why they are doubtful. Consequently, I think one is justified in taking a swab and awaiting the result. I recently had four measles cases (two in one house) in which there was a complaint of slight sore throat. All four swabs were positive, and yet there was nothing to be seen on the fauces in any one of them.

Another point brought up recently in another medical publication is the risk in certain cases of administering serum to cases subsequently proved to be non-diphtheritic. Although I personally have had no untoward results beyond a rash, there is no doubt the risk exists. What, then, is the position of the family doctor who, on seeing a "doubtful" case, takes a swab and gives antitoxin at the same time, if his little patient develops gangrene and sloughing at the site of injection, the swab having been returned negative? Would it be looked upon by the child's parents as a justifiable mode of procedure?

Of course, when the thoat is obviously diphtheritic with the usual toxaemia (and this is an important point in differentiating the "true" from the "doubtful") the course of procedure is clear.—I am, etc.,

Pitsea, Essex, Aug. 18th. D. MACLEOD GRAY.

SIR,—This interesting correspondence raises important issues to the general practitioner: (1) When is a "swab" necessary for diagnosis? (2) When is it necessary for other purposes? (3) Should "swabbing" be abandoned? (4) What value is to be attached to the result of a swab? (5) Are "area diphtheria specialists" required?

1. Diphtheria starts at a definite spot and spreads from that spot producing toxic symptoms—a frequent pulse out of all proportion to the temperature. It should present no difficulty in diagnosis from acute follicular tonsillitis, which shows many different spots (pus at the mouths of the follicles) with a higher temperature and a pulse proportionately rapid. Therefore, for a clear clinical case of diphtheria the swab *per se* is not necessary *purely* for diagnosis.

2. It may be necessary (*a*) for confirmation of the diagnosis both for the practitioner and for the patient or relatives; (*b*) to give assurance to parents—and in these days, when so much newspaper reference is made to "swabs," many parents will not be satisfied with anything less; (*c*) for the detection of a "carrier"; (*d*) in "contacts" to acquire early information about the spread of an infection; (*e*) for information in the immunization of a patient against diphtheria; (*f*) for the determination of Vincent's angina; (*g*) in the exclusion of diphtheroid bacilli in certain inflammations of the fauces; and (*h*) perhaps in some cases of scarlet fever, which is frequently complicated with diphtheria bacilli.

3. The above summary under (1) and (2) gives a definite negative reply to question (3).

4. A "positive" report of a swab is "positive" existence of the diphtheria bacilli, and is presumptive evidence of the existence of the disease. The "positive" evidence of the existence of the disease diphtheria is the existence of the membrane and its clinical signs and symptoms. The existence of non-virulent diphtheria does not mean the existence of the disease, though it may or may not mean a *potential* carrier. A negative report is no proof of the non-existence of the disease. I have had "negative" reports on cases sent to hospital and "positive" reports from other laboratories. Why some swabs are negative and others from the same case positive I cannot explain. The clinical picture in diphtheria is clear and is the most reliable evidence of the disease.

5. "Diphtheria specialists" are most definitely not required. It would make the situation worse by the practitioner in many cases throwing the responsibility on the specialist. It would make the practitioner, in many cases, less alert in his diagnosis and in shouldering his

responsibility. The creation of this class of inspectors would be another source of interference with general practice. It cannot be justified on the point of mortality, since whooping-cough kills more than measles, and more than scarlet fever and diphtheria combined. The appointment would be on wrong lines, for surely with such a cheap and easy method as immunization against diphtheria existing it is preferable, and advisable, that the public should be educated and induced to have their children protected against the disease, than to have to pay "inspectors" to diagnose a disease and further ridicule the general practitioner to the laity.—I am, etc.,

Ilford, Aug. 18th. A. G. NEWELL, M.D., D.P.H.

SIR,—The discussion *re* the advisability of "taking a swab" in any suspicious case is surely unnecessary to-day. Every student in my time in the "Glasgow" school was taught the absolute necessity of "having a swab" done immediately, and whilst awaiting bacteriological confirmation to give either antitoxin or horse serum (10 c.cm.). Failure to do so was borne in on us as an heinous crime, so that I feel assured we have all made certain of carrying out this valuable aid to aborting progress of the condition if positive; if negative no harm is done. The additional expense incurred is negligible as compared to the consequences if time be lost.—I am, etc.,

Salford, Aug. 18th. R. H. ABERCROMBIE, M.B.

SIR,—Writing as a bacteriologist whose work involves the examination of a large number of diphtheria swabs in the course of a year, I find it very depressing to realize that there are still practitioners who, when diphtheria in an acute stage is suspected, make the sometimes fatal mistake of waiting until they have received the result of a bacteriological examination before injecting antitoxin: through the agency of such the laboratory becomes a source of danger in the place of the help which it should be. At the same time I feel that the bacteriologist does not always take advantage of methods available for making an expeditious or even immediate diagnosis, and that therefore some of the delay which may have such disastrous results is often quite unnecessary.

It can be stated with confidence that in the majority of cases of acute diphtheria from which a satisfactory swabbing has been taken the disease can be diagnosed on the examination of the direct smear. But from the perusal of recent literature and from conversation with other bacteriologists I have gathered the impression that, in this country at any rate, examination of the direct smear is not considered worth doing in many laboratories. I am convinced that this position is quite wrong. In this laboratory, during the last twenty-three years, we have examined 272,000 swabs. Of these, 76,000 have been from "acute" throats. In such "acute" swabs as were "satisfactory" (that is to say, when there has been sufficient material to make an examination possible) we have been able to detect the diphtheria bacillus in about 85 per cent. of those from which this organism was subsequently grown on cultivation. These swabs have come, generally by post, from all parts of Kent; if we had been able to take the swabs ourselves and examine them without any delay I am confident that the proportion of successes would have been higher.

The method employed is the hanging-drop modification of Pugh's toluidin-blue stain (*Lancet*, July 6th, 1912). After a little practice with this extremely simple and rapid, though perhaps rather unusual, method, my experience has been that bacteriologists soon feel able to recognize with confidence in the direct smear the somewhat irregular but characteristic appearance which the bacillus shows—an appearance which is often very different from that of the typical organism after growing on a culture medium—and their diagnosis is confirmed by the subsequent cultivation. The only pitfall which must be avoided results from the fact (for which I am unable to give any explanation) that in adults diphtheroid organisms are sometimes seen which closely resemble the diphtheria bacillus as seen in swabs from a child's throat. Consequently, we do not report on direct smears of swabs taken from a patient over the age of 18. For obvious reasons also we do not report on a direct smear which appears "negative."

Surely a method by which such results can be obtained is worth investigation and adoption as a laboratory routine. In many cases the regrettable "waiting for the result of cultivation" would be avoided.—I am, etc.,

CONSTANT PONDER,
Maidstone, Aug. 20th. Bacteriologist, Kent County Council.

The G.P., the Schoolmaster, and the Specialist

SIR,—A few years ago I wrote to the *Journal* on the decay of courtesy and the increasing lack of the minor graces in the profession. I am a general practitioner and also an M.O. to a school. Among other examples which I cited, I complained that, when at the end of term I wrote to family doctors concerning patients of theirs the majority failed to acknowledge my letters, term after term. Having taken the trouble to obtain their names, and given up an appreciable amount of time to the task, I was annoyed. Surely it ought to be regarded as common courtesy to acknowledge any letter from a colleague!

Further, at the beginning of term often one or two pupils return who have been ill during the holidays and still require some attention, and it is quite common for instructions to be sent to me by a parent or guardian, with a vague history of what has been the matter, and also some unknown medicine, pills, and so on; but no word from the family doctor, from whom the instructions presumably emanated. I have even had, from a parent, instructions as to how I was to give a vaccine. These instructions apparently came originally from a well-known London consultant. That consultant must have known that the patient was returning to school, yet neither he nor the family doctor communicated with me. Needless to say I declined to have anything to do with the unknown vaccine. How pleasant is the contrary, when one receives a short note from the family doctor, enclosing the specialist's remarks for perusal.

This lack of courtesy and efficiency is not universal. There are several doctors with whom one has periodical correspondence during the school life of one or more of their patients, and with whom one's relations are cordial and interesting. Of course the school doctor ought to send any observations to the family doctor, and make it clear that those observations are subject to the opinion of the latter. As for myself, I do not write so many letters at the end of term as I used to do!—I am, etc.,

Maldon, Aug. 14th. IVAN M. PIRRIE.

SIR,—In those schools which, like Rugby, Wellington, Marlborough, Tonbridge, Lancing, and Christ's Hospital, have an infirmary or sanatorium where all except the most trivial cases are sent the matter is simple. The school medical officer forwards reports to the parents or to the family doctor, as he thinks fit, notifying the housemaster as occasion requires, who is thus saved much worrying correspondence.

In those schools where sick boys are nursed in the houses the matter is usually more complicated. The housemaster, who acts *in loco parentis*, obtains information about the patient from the school medical officer, from the house matron or special nurse as the case may be, and possibly also from his wife, who visits the boy during the day. His letter to the parents is thus likely to contain a mixture of medical and nursing information, which often ill describes the actual condition of the boy, in some cases arousing undue anxiety, in other cases failing to allay it.

When the letter has in due course been forwarded to the parents, what is the next procedure? As I know by experience, the parents go to the family doctor to get his sympathy and opinion, showing him the housemaster's letter, which very often may just lack the precise information to enable the doctor to reply satisfactorily to the parents' questions. The family doctor may then suggest that he will get into touch with the school medical officer, which he does by telephone or letter according to the urgency of the case, and with fresh or more technically explained facts at his disposal he approaches the parents once more. Is not this, which is in no sense an exaggeration, a most cumbersome procedure, and one causing needless anxiety to those involved? Furthermore, it is inefficient, since the medical officer's views on their way to the parents or family doctor are liable to get an admixture of misrepresentation.

My suggestion is as follows. All parents would be notified by the school authorities in a circular somewhat as follows:

"During term the school medical officer will report any case which he considers may become serious directly to the family doctor, and keep in touch with him as long as is necessary. The parents will thus get first-hand reliable information in regard to the progress of the illness. In addition to this the housemaster will, as usual, communicate at his discretion in general terms directly with the parents."

There is a further most important point gained by this method, which safeguards the housemaster and the school in those cases which, fortunately but rarely, end fatally or in some way disastrously for the boy. There is no loophole for mistake, as exists in the indirect method of reporting sickness. The school medical officer, supported in his direction of the case by the family doctor, is well able to answer any complaints of negligence, which from time to time are actually made by parents and which at present are borne, quite unjustly, by the housemaster or the school authorities. The school medical officer and the family doctor are, as is well known, safeguarded by their organizations, which deal efficiently with such complaints and so absolve the school from much unnecessary responsibility.—I am, etc.,

Bournemouth, Aug. 20th. W. Savile Henderson.

Use of "Oil" Vaccine in Rheumatism

Sir,—We have read with great interest Dr. Warren Crowe's letter in your issue of August 4th (p. 233) on the use of "oil" vaccine in rheumatism. As was pointed out in our original paper (*Journal*, March 10th, 1934, p. 424), we have given very large doses of tuberculin and many other vaccines in combination with an olive oil emulsion without producing any reaction. Dr. Warren Crowe's injections were apparently made with a 3.5 per cent. emulsion, which is the percentage of the dispersed phase in the preparation we used in our original experiments with tetanus and diphtheria toxins. Since that time we have injected various vaccines with an increased percentage of olive oil (5 to 10 per cent.), our reason being that from the point of view of determining the amount of adsorption the available surface area of the dispersed phase is the only factor concerned. The preparations we are now using are produced by the Glaxo Laboratories on the special apparatus described by us last year in the *Journal of Physiology* (1933, lxxviii, No. 4, 467). We are given to understand that supplies of such finely dispersed emulsions are available for research workers.

At the present time we have under observation a large number of cases of surgical tuberculosis being treated with a mixed vaccine of tuberculin and oil. In the preparation of this tuberculin tubercle bacilli have been dissolved by a process which will shortly be published, and it is worth recording that *minimum* doses of 1/2 mg. are being given with extremely encouraging results and no untoward reactions. We are getting similar results with other vaccines—for instance, streptococcal, staphylococcal, *B. acnes*, etc.

We should be interested to know the size of the particles in the dispersed phase of the preparations with which Dr. Warren Crowe has been working. In our own experiments results have been unsatisfactory with particles as large as 2 to 2½ mμ.—We are, etc.,

St. Mary's Hospital Medical School, Aug. 14th. V. G. Walsh. A. C. Frazer.

Proposed Medical School for Women

Sir,—A daily paper has recently announced that plans are being considered for starting a medical school for women at the West London Hospital. The time is hardly ripe for any official or detailed account of a scheme which is still in the earliest stages of embryonic life, but as the news has appeared in the lay press I feel that it would be wise to make known to the profession, through your columns, the facts of the case.

It is true that the possibilities are being explored, but at present the proposal has not received the sanction of the Board of the hospital, and no official approach to the university has been made. Developments are not to be expected until after the vacation. As soon as any definite decision is made the details will doubtless be communicated to the profession through the medium of the leading medical journals.—I am, etc.,

Aug. 18th. Maurice E. Shaw, M.D., F.R.C.P., Vice-Dean of the Post-Graduate College, West London Hospital.

Origins of Sherlock Holmes

Sir,—In the *Journal* of August 11th (p. 278) it is stated that "when practising . . . at Southsea, Conan Doyle hit on the idea of an amateur detective who should apply the methods of Joseph Bell, etc." With all due modesty, and respect for the writer of this, I think this statement is somewhat fictitious. When a student at Liverpool in the late 'nineties I read a paper on Sherlock Holmes to the Students' Debating Society. The chairman on that occasion was George Hamilton, assistant honorary surgeon to Mitchell Banks, and he took the opportunity thus afforded to tell us of his own acquaintance with Doyle, when both were students at Edinburgh. He told us that *at that time* Conan Doyle, deeply interested in Poe's detective works, but recognizing that they were "caviare to the general," told Hamilton that he had the idea of writing detective fiction according to the system of Poe, but greatly simplified and brought down to the level of ordinary people. I do not think that this fact has previously been published.

After Poe, what poor stuff Doyle's is! As Blatchford expressed it long ago: "There was enough genius in Poe's little finger to make a score of Conan Doyles."—I am, etc.,

Harston, Cambridge, Aug. 13th. W. J. Young.

Occupational Therapy

Sir,—Prevention being better than cure, a further consideration here arises. If occupation has proved such excellent treatment for nervous ailments, may we not suppose that the chief cause of the widespread nervousness which afflicts our age, with its characteristic resort to the dope, increase of insanity, suicide, war-fever, etc., is simply—unemployment?

This is very largely true, but it is not the whole truth; for, broadly speaking, there are two kinds of work. One is creative, self-expressive work, and the other is machine-minding. In my opinion the general mental and moral enfeeblement of our time has been brought about, not only by the sheer idleness of many, but by the steady subordination of others to the machine. And, of course, there are vicious circles too; much "employment" means turning out machine-made goods which only the perverted taste of idlers would call for. Mental prophylaxis therefore demands that as many people as possible should at once get back to self-expressive, creative employment.

How is this to be done? Not, I think, by the Government, which has already taken on much more than it can perform. Perhaps the mental welfare councils will be thinking this problem over in the meantime. It would be interesting to know their answer.—I am, etc.,

Fife, Aug. 13th. A. J. Brock.

Breach of Professional Confidence

Sir,—I should be very grateful if you would bring to the notice of your readers the following instance of breach of confidence with regard to medical reports for compensation cases, as I feel that a very big principle is involved.

I had several times examined a man, from the surgical point of view, for an insurance company, and a colleague examined him from the medical side, both of us reporting fully and frankly to the insurance company concerned. When I was recently asked to examine the man I found, to my surprise, that he had in his pocket copies of my own and my colleague's reports, and also of the report of a surgeon who had examined the man for his own solicitor. He was thoroughly disgruntled about various remarks made by myself and my colleague, and had evidently brooded over these reports until he was obviously in a condition of neurasthenia and yet extremely resentful that it should have been suggested that there was any connexion between the payment of compensation and his disability.

Possession of the report of the surgeon who examined him for his own solicitor had had a particularly bad effect on him, and the moderate physical disability from which he suffers was enlarged to cover his whole mental horizon. I took the matter up with the insurance company for whom I was reporting on his condition, and they informed me that they had exchanged medical reports with the man's solicitor and that the solicitor had without their consent or approval handed them over to the man on his insisting on seeing them. The insurance company wrote to the solicitor protesting at this breach of confidence, and apparently he admitted his error and expressed regret.

I feel, however, that this is a glaring instance of breach of professional confidence, and that the medical profession generally should be warned to insist that these reports are confidential, and under no circumstances, without the consent of the examining doctor or surgeon, should they be shown to the person examined.—I am, etc.,

August 16th. Consulting Surgeon.

The Treatment of Lupus Vulgaris

Sir,—At the conclusion of a discussion on the treatment of lupus vulgaris at the Annual Meeting, reported in the *Journal* of August 18th (p. 322), Dr. Lomholt disposed of the question of the use of tuberculin in this disease by remarking that it "had been tried extensively at the Finsen Institute, but it had been abandoned." In the *British Journal of Dermatology and Syphilis* (May, 1934), Dr. Robert Aitken of Edinburgh, writing on the treatment of lupus vulgaris, concludes his article with the statement, "Tuberculin as a remedy has undeservedly fallen into disrepute," and in the February issue of the same journal there is a record of cases of lupus treated with tuberculin with considerable success. The worst of these cases, W. W., is still under treatment, and shows no sign of breaking down during the nine months that have elapsed since, notwithstanding the extensive area involved. Other patients have been similarly treated and are showing improvement.

It is wrong and unscientific to condemn tuberculin without an adequate trial. The endeavour should be made to learn how to use it. Knowledge of tuberculin in its widely different actions in different individuals is in its infancy. My object in writing this letter is to draw the attention, not only of dermatologists, but of all interested in the treatment of tuberculosis to the value of the clinical work now in progress in London and elsewhere in establishing the truth about the value of tuberculin.—I am, etc.,

H. S. Burnell-Jones, D.P.H.Oxon.

Hayes, Kent, Aug. 20th.

Infra-red Rays in Treatment of the Septic Hand

Sir,—Those engaged in the practice of physical medicine who read the discussion on "The Septic Hand," which took place at the Annual Meeting of the Association (*Journal*, August 4th, p. 220), must indeed be surprised that not one of the participants seemed to be aware of the benefits to be derived from the application of infra-red irradiation to any septic focus.

It has been proved by clinical observation that in the treatment of boils, carbuncles, and septic processes generally this should be the treatment of choice. If it is instituted early, and not adopted as a last resource, such conditions rapidly clear up. Local treatment should be combined with focal ultra-violet irradiation, and also general ultra-violet irradiation in order to increase the bactericidal power of the blood and the general resisting powers. If treated early enough septic processes may be aborted and saved from the surgeon's knife. If incision is deemed necessary the evacuation of pus is expedited by means of infra-red irradiation, which acts as a superfomentation in such cases. In addition, pain is markedly relieved from the very commencement of treatment by the sedative action of the rays on nerve endings, and by the increased blood supply produced.

I have fully described the method in my book *Therapeutic Uses of Infra-red Rays* (second edition). Surely it is time that a method which has been in vogue on the Continent and in America for many years should be given an extended trial in this country.—I am, etc.,

London, W.1, Aug. 8th. W. Annandale Troup, M.D.

Obituary

GEORGES DREYER, C.B.E., M.D., F.R.S.

Professor of Pathology, University of Oxford

Professor Georges Dreyer, whose death occurred on August 17th at the age of 61, was Danish by birth, the son of Captain G. H. N. Dreyer of the Danish Royal Navy. He was born in Shanghai and educated in Denmark, taking the degree of M.D. in the University of Copenhagen. His scientific education was unusually wide, and it was supplemented by post-graduate studies and research in Germany and France. In 1900 he married Margrete Jörgensen of Söllestedgaard, Laaland, who survives him. There are no children.

In Denmark Dreyer was greatly influenced by Salomonsen, whom he regarded as a great teacher, and was deeply interested in the work of Arrhenius and Madsen on the application of chemical and mathematical principles to immunology. His own early researches on the biological action of light, accurate measurements of blood volume, methods of estimation and dosage of toxins, and the improvement of the Widal test by the use of standardized sterile suspensions all bear the mark of pioneer work in the introduction of accurate quantitative methods in biology, which was one of his main aims and achievements. Largely on the strength of his brilliant researches Dreyer was appointed professor of pathology in the University of Oxford in 1907 at the unusually early age of 34, and he was forthwith elected a Fellow of Lincoln College, where the loss of a loved and highly valued colleague will be most deeply felt. His great energy and driving force soon enabled him rapidly to raise the Oxford School of Pathology to a high level of reputation both for teaching and for research.

At the outbreak of war in 1914 Dreyer was appointed a member of the Pathological Advisory Committee to the Army Medical Service, where he took the initiative in pressing for "triple" inoculation in place of inoculation against typhoid only. At the same time he saw his opportunity both of serving the country and of popularizing his improved method for the Widal reaction by arranging with the new Medical Research Council for a service laboratory at Oxford to supply sterile standardized suspensions to the Army and Navy for the diagnosis of the enteric fevers. Under his general supervision this "standards" laboratory has continually enlarged its scope, and now serves an empire-wide public of bacteriologists with high-grade standardized materials for the diagnosis of numerous infections. In 1915 Dreyer was commissioned by the R.A.M.C. and sent to Wimereux to organize the laboratory diagnosis of enteric fever and dysentery, which he carried out with outstanding ability and success. While in France he turned his attention also to the physiopathology of high flying, and invented a most ingenious self-regulating apparatus for the automatic supply of oxygen to airmen. In 1919 he was decorated for his war services with the C.B.E. In 1921 he was elected a Fellow of the Royal Society, being already a Fellow of the Royal Danish Academy of Letters and Science and an Officier de l'Instruction Publique in France.

Having always been dissatisfied with the facilities for pathological research and teaching in Oxford, Dreyer was delighted, in 1927, to seize the opportunity offered by Sir William Dunn's trustees to build a laboratory worthy of his chosen science and of the University which he so greatly loved. Meanwhile he gave much valuable time to service on the Hebdomadal Council and the University Chest, and was also for a period a member of the Medical Research Council.

During the main part of his life of intense and varied research Dreyer's two main motives were accuracy of technique and the establishment of a series of biological constants in human and animal physiology to act as a basis for the assessment of normality and hence for the detection of pathological states. His well-known work on the relation of vital capacity to body measurements is an instance of research on these lines. "*Das technische ist alles*" was one of his favourite quotations. A great technician himself, with a passion for truth and a contempt for bad experiments, he inspired his colleagues and assistants with the same feelings. He was a very competent linguist, being almost equally at home in Danish, English, German, and French. Moreover, his knowledge of mathematics, physics, and chemistry were greatly in advance of the standard achieved by most other pathologists of his time. But an even more impressive characteristic in his earlier days was a tremendous potential, an irresistible force which overran all opposition or inertia. There were, perhaps, some who for a time felt a trifle aggrieved by what seemed too great an intolerance of conflicting motives or opinions, but with the arrival of full maturity Dreyer's natural affectionateness and generosity soon healed the slight abrasions of earlier controversies.

His contributions to physiopathology and bacteriology have been numerous and important, and have covered a singularly wide range of subjects. Medical science is greatly impoverished by his loss. At all times he was entirely lovable to his intimates, among whom his most junior colleagues and many pupils may be numbered—for Dreyer had no trace of the professional mind, and was himself perennially young at heart. His home was open to all, and his hospitality was remarkable. He was no ascetic, but loved to share with his friends his unusually good table and the excellent wines of which he was an expert judge. Scattered in all quarters of the globe, as here in Oxford and England, are men and women who have drawn their inspiration from the power of Dreyer's passion for truth, and whose hearts have been warmed by his gift of deep and comfortable friendship.

[The photograph reproduced is by Russell, London.]

DR. GEORGE A. MOORHEAD

By the death of Dr. George A. Moorhead of Tullamore, Offaly, the medical profession in Southern Ireland has lost one of its oldest, best known, and popular figures. Dr. Moorhead enjoyed a very extensive practice in the midland counties, and his services as a consultant were largely availed of. He was an old and valued member of both the British and the Irish Medical Associations, and by his standard of professional conduct set an excellent example to the junior members of the profession. Educated at Dublin, he became a member of the Royal College of Physicians in 1881, a Fellow of the Royal College of Surgeons in 1893, and took his D.P.H. in 1907. Among the public appointments he held were: medical officer of the Tullamore dispensary district, and surgeon to the district hospital. Early in the campaign against tuberculosis he contributed an important publication under the title of "Tuberculosis, Retrospective and Anticipatory," to the *Irish Medical Association Journal*. Although a very busy practitioner, Dr. Moorhead took a keen interest in horse breeding, and kept the best strains of the thoroughbred in his stud at Tullamore.

BERTRAM JAMES COLLINGWOOD, O.B.E., M.D.

Professor of Physiology in the University of London

Professor Bertram James Collingwood, who died on August 8th, 1934, from coronary thrombosis, after a short illness, was born in Sunderland on December 18th, 1871. He was the son of the Rev. C. G. S. Collingwood, rector of Southwark, Sunderland.

Collingwood entered Caius College, Cambridge, in 1895, and joined St. Mary's Hospital Medical School as a student in 1898, qualifying in 1901 and taking his M.D. in 1905. After qualifying he joined the R.A.M.C. as a civil surgeon and served in the Boer War. At the conclusion of the campaign he returned to England and worked with the late Professor A. D. Waller at the University of London Physiology Research Laboratory, which existed at that time at the Imperial Institute; here he was of great assistance to Professor Waller in his valuable researches on chloroform and other general anaesthetics. During this period a number of important original papers were published by himself, and also jointly with Professor Waller and others. His work in connexion with respiration and inhalation anaesthetics (chiefly chloroform) was of outstanding importance, and served to place the action of chloroform vapour in anaesthesia on a sound scientific basis. Incidentally it added greatly to the safety in the use of chloroform as a general anaesthetic, and clearly indicated the dangers to be avoided by anaesthetists. It was the work of Collingwood and Waller which first demonstrated that fatalities during chloroform anaesthesia were generally due to the inhalation of a too high percentage of chloroform vapour in the air inhaled. They showed that when the proportion did not exceed 2 per cent. safety was ensured. An apparatus whereby the percentage of chloroform in inhaled air could be regulated was invented by them for actual use in anaesthesia, and this was employed in the operation theatres at St. Mary's Hospital for some years. Collingwood published several papers which emphasized the toxic action of chloroform, and no doubt his work contributed to the development of the view now held in this country that chloroform is an anaesthetic not devoid of danger. He showed that it should be used sparingly when long anaesthesia was required, ether being used wholly or partly in its place when possible. In 1910 Collingwood published, conjointly with W. H. Willcox, a paper entitled "The Therapeutic Use of Alcohol Vapour mixed with Oxygen" (*British Medical Journal*, 1910, ii, 1408), and this mixture came into general use as a valuable stimulant in cases of cardiac failure in desperate illness. He also published several papers on the action of calcium in connexion with blood coagulation, and, in conjunction with Dr. M. T. MacMahon, papers relating to blood coagulation and the action of anti-coagulants, and on the influence of thrombin and anti-thrombin (*Journal of Physiology*, vols. xlv and xlvii). His researches were of great scientific value, and have played an important part in the development of modern therapeutics.

From 1904 to 1909 Collingwood held the post of demonstrator in physiology at St. Mary's Hospital Medical School. In 1909 he was appointed professor in the chair of physiology at University College, Dublin, and he quickly established a reputation as a brilliant lecturer and teacher. In 1915, after the first gas attack in the Great War, he gave his services to the Research Department on Measures for Protection against Poisonous Gases at the R.A.M.C. laboratories, Millbank. In 1916 he was appointed chemical adviser to the Irish Command, and was given a commission in the R.A.M.C., being promoted to the rank of major in 1917. For his services in the war he was awarded the O.B.E. in 1919. In 1920 he was appointed professor of physiology at St. Mary's Hospital Medical School, University of London, and held this post until his death.

Collingwood was a most devoted alumnus of St. Mary's Hospital Medical School, and never spared himself in giving of his best to his Alma Mater. It is to be feared that this devotion often led to the overtaxing of his strength by doing more than his share of the teaching of physiology, in order that the finances of the school might be helped during difficult times. He was a brilliant lecturer and a fine teacher of the experimental side of physiology. He was most popular with his students, who always felt that in any difficulty he could be approached with the confident prospect of kindly help and encouragement. He possessed great originality of mind, and an attractive personality. He was much loved by his colleagues, students, and all with whom he came in contact in his professional life. St. Mary's Hospital Medical School and the University of London have sustained a great loss by his death.

Collingwood was a nephew of Lewis Carroll, and he devoted great energy towards the establishment at St. Mary's Hospital of a Memorial Children's Ward in memory of his uncle, undertaking a lecture tour in America in 1932 for this purpose. He was instrumental in establishing the Waller Memorial Laboratory in Physiology at St. Mary's Hospital Medical School to commemorate the work of his former teacher and colleague. In 1917 he married Grace Jane Wilkinson, daughter of the late Dr. Wilkinson and sister of Sir Russell Wilkinson. He leaves a widow and three children (a daughter and two sons) to mourn his loss.

W. H. W.

[The photograph reproduced is by Elliott and Fry, Ltd.]

FRANK NYULASY, M.D., B.S.Melb.

Late Honorary Surgeon, The Women's Hospital, Melbourne

The death of Dr. Frank Nyulasy of Melbourne last May deprived Australian medicine of a most distinguished pathological research worker, who had devoted much of his professional life to the problems relating to obstetrics and gynaecology.

Born in Ballarat sixty-eight years ago, he received his medical education in Melbourne, where he graduated M.B., B.S. He then became house-surgeon at the Melbourne Hospital, where he worked under the late Sir Thomas Fitzgerald, from whom he acquired a great ability in the field of surgical diagnosis. His bent then turned more definitely to pathology in connexion with gynaecology, and he wrote a thesis on polypoid endometritis, which was accepted for the degree of M.D., and was subsequently published in the *Journal of Obstetrics and Gynaecology of the British Empire*. A paper read by him at the Medical Congress in Adelaide, on "A Rare Form of Pelvic Tumour," led to his being invited to become a regular contributor to the official journal of the Hungarian National Medical Association. The problems of puerperal infection attracted his closest attention, and the work of Colebrook and his colleagues at Queen Charlotte's Hospital interested him deeply. Not long before his death he supplied a summary of their investigations to the *Medical Journal of Australia*. Possessed of a fine critical ability, and the power of lucid expression, he was a discriminating commentator of the value of new discoveries. In 1905

he was appointed surgeon and agent to the Royal Navy in Melbourne. He was required to attend sailors discharged from British warships, and to perform, in addition, various administrative duties. In 1922 he came to London, read a paper entitled "Puerperal Fever" before the Royal Society of Medicine, and was elected a Fellow.

Of his other activities it may be mentioned that he was keenly interested in research work, and bequeathed a legacy of £1,000 to Melbourne University in memory of his brother, the late Arthur Nyulasy, who was the first to describe correctly the cardinal ligaments of the uterus. For three years he was president of the Royal Victorian Institute for the Blind, and one of the original members of the Big Brother Movement in Australia. An outstanding hobby of his was literature, Shakespeare and Tennyson providing him frequently with topics for lectures, broadcasts, and papers.

DR. GEORGE S. STANSFIELD, O.B.E.

We regret to record the death on August 18th, at his house at Heswall, of Dr. George Sutcliffe Stansfield, who was a well-known figure in Birkenhead for over half a century. Receiving his medical education at Manchester, Dr. Stansfield took the L.R.C.P.Ed. and L.M. in 1873, and the M.R.C.S.Eng. in the same year. In 1874 he began his practice in Birkenhead, retiring in 1921. He became medical officer and medical superintendent to the old Birkenhead Board of Guardians at Tranmere about 1895, and twenty years later, in submitting his resignation, offered on patriotic grounds to continue his services. The Board availed itself of this opportunity, and he remained medical superintendent to the Tranmere Infirmary until 1921. During the war his work increased considerably, and towards its close there were no fewer than 600 beds at Tranmere at the disposal of the War Office. At his retirement the gratitude of the Board of Guardians was shown in its presentation to Dr. Stansfield of his portrait and in its laying to his credit all the improvements which had taken place in the infirmary during his tenure of office. For his work in this connexion he received the honour of O.B.E.

Among his other appointments were that of consulting surgeon to the Birkenhead Borough Hospital and medical officer to the Albert Industrial School. He was one of the oldest members of the B.M.A., having belonged to it for fifty-seven years; he held the position of chairman of the Birkenhead Division in 1924–5. Dr. Stansfield was a pioneer in gastro-intestinal surgery, and it is a moot point whether he was the first or the second to perform in this country the operation of gastro-enterostomy. An interesting personality, with many interests outside his professional work, he was widely known, greatly respected, and much loved. His death will be a considerable loss in the Birkenhead and Liverpool district.

COLONEL C. R. TYRRELL

We have to announce the death at Folkestone, on August 12th, of Colonel C. R. Tyrrell, C.B., C.B.E., A.M.S. (ret.). Born in 1859 Colonel Tyrrell completed his medical education at the Middlesex Hospital, taking the M.R.C.S.Eng., and L.S.A. in 1881. He entered the Army in 1882. Early in his career "Chas.," as he was affectionately known, displayed a character noticeable for soundness of judgement, fearlessness in decision, and a keen sense of duty. These attributes, combined with a genial manner and camaraderie, endeared him to all.

The years 1884–9 found him in India, and after a short spell at home he saw active service on the North-West Frontier with the Utman Khel column and the Buner field force; he was mentioned in dispatches, obtaining the medal with clasp. In the interval between these expeditions he was specially selected for appointment to the staff of the R.A.M.C. depot at Aldershot. There his soldierly qualities and professional ability found full play, to the great advantage of officers and men who passed through his hands. His knowledge of the handling of men and his teaching experience caused him to be selected as one of the medical staff of the Royal Military Tournament. In 1912, at his own request, Tyrrell was placed on the Reserve of Officers, only to be recalled two years later to the War Office. It was during his service in London that the War Office found full scope for his exceptional qualifications. He joined the Ministry of National Service, worked with unflagging zeal, and carried through to a successful issue a task worthy of his ripe experience and personality.

Tyrrell loved his Corps, and was ever proud of its achievements and distinction, and the great part contributed by the whole medical profession towards the successful issue of the war. He was jealous of its dignity and honour, and its nobility as a corps—as a profession militarized for the specific purpose of relieving suffering humanity. That he and Waggett were partly responsible for the ultimate decision that the R.A.M.C. should have a fitting memorial to those who lost their lives in the war in Westminster Abbey was an abiding satisfaction to him in his declining years. For this enterprise his comrades will always be grateful.

On August 5th, in a London nursing home, the death took place of Dr. THOMAS HUNTER MASSEY, O.B.E., *M.C.*, at the early age of 50. Dr. Massey had but recently retired from the Colonial Medical Service after twenty-four years' service, the majority of which was spent in Kenya. He was of a quiet, retiring disposition, and had a sincere, direct simplicity of character, which endeared him to all who knew him. Always sympathetic and ready to help those in misfortune or trouble, he will be a sad loss to his many friends and comrades in the Colonial Service and outside it. Dr. Massey qualified L.R.C.P.I. and L.M., L.R.C.S.I. and L.M. in 1906, and was appointed medical officer, St. Vincent, West Indies, in 1909. In January, 1913, he was transferred to Kenya Colony, where he remained until last year, retiring as a senior medical officer, to which rank he had been promoted in 1923. During the war Dr. Massey served as medical officer to the King's African Rifles and saw considerable service in the East African campaign, being awarded the Military Cross. On his retirement from the Colonial Service he was made an Officer of the British Empire. Since his retirement from Kenya Dr. Massey had been working at Netley Hospital, and, while on duty there, was taken ill with mastoid trouble. Meningitis supervened, and, despite operative measures, he succumbed.

Dr. JOHN DESMOND GIMLETTE, who died at Cheam on April 24th, was the son of the late Fleet Surgeon Hart Gimlette, M.D., and was educated at Epsom College and St. Thomas's Hospital. After taking the M.R.C.S. and L.R.C.P. in 1890 he joined the medical service of the Federated Malay States, being residency surgeon of Pahang 1897–1900, and of Kelantan 1909–21. On the outbreak of war he volunteered for military service, and in 1915 received a commission in the R.A.M.C. With the rank of major he was officer commanding troops in H.M. hospital ship *Essequibo*, and later joined the German East African Expeditionary Force as protozoologist. On demobilization Dr. Gimlette returned to his post in Kelantan, but unfortunately, while operating on a coolie, contracted a severe septic infection, from which, after a long illness, with the loss of a leg, he eventually recovered. This ended his life-work in Malaya, where his transparently sincere and sympathetic personality had secured for him the confidence and affection of all, from the Sultan to the humblest peasant, to whom alike he was always ready to

devote his skill. In gratitude His Highness the Sultan presented him with the Kelantan State Medal as a token of his good will and affection. The confidence which he had won, combined with Gimlette's great knowledge of the language and never-failing industry, enabled him to gain a deep insight into the characteristics and customs of the country and its people. In his book *Malay Poisons and Charm Cures*, of which three editions have been issued, Gimlette described, with a fascinating wealth of detail, medicine as practised by the " medicine man " of Malay, and dealt with the various animal and vegetable poisons, some of which, hitherto unknown, have definite therapeutic properties. He was also the author of many contributions to tropical and Malayan medicine. During his last years, with a devoted wife and two young daughters, he was engaged, in collaboration with other workers, in compiling *The Malayan Medical Dictionary*. This, although unfinished at his death, is happily to be completed by one of his co-workers—Mr. H. L. Thompson. By his many friends Gimlette will ever be remembered for his steadfast loyalty and affectionate comradeship.

Universities and Colleges

UNIVERSITY OF LONDON

Professor G. Grey Turner, M.S., F.R.C.S., has been appointed to the University Chair of Surgery at the British Post-Graduate Medical School.

Dr. Amy M. Fleming has been appointed to the University Chair of Obstetrics and Gynaecology (London (Royal Free Hospital) School of Medicine for Women) as from October 1st.

The Services

Surgeon Rear-Admiral G. L. Buckeridge joined the Admiralty on August 15th as Deputy Medical Director-General, in succession to Surgeon Captain C. V. Griffiths, who goes to Haslar Hospital for a course in surgery.

DEATHS IN THE SERVICES

Colonel Theophilus Percy Jones, C.B., C.M.G., late R.A.M.C., died at Cheltenham on July 26th, aged 68. He was born at Ardtrea, County Tyrone, on January 6th, 1866, the son of the late Rev. T. J. Jones of Drumard, County Leitrim, and of Tullaniskin Rectory, County Tyrone, and was educated at Dublin University, where he graduated M.B., Ch.B. in 1890. Entering the R.A.M.C. as surgeon lieutenant on July 27th, 1892, he became lieutenant-colonel in the long war promotion list of March 1st, 1915, colonel on January 26th, 1917, and retired in 1921. He served in the Tirah campaign on the North-West Frontier of India in 1897-8 (medal with two clasps), and in the South African War of 1899-1902, when he served in operations in the Transvaal, in the Orange River Colony, and in Cape Colony, including the actions of Johannesburg, Pretoria, and Diamond Hill, Wittebergen, and Ladybrand (Queen's medal with four clasps, and King's medal with two clasps). In the war of 1914-18 he served as an administrative medical officer, as A.D.M.S. in the Mediterranean Expeditionary Force and in France, and as D.D.M.S. in France, and, after the armistice, as D.D.M.S. of the Army of the Rhine; was mentioned in dispatches in the *London Gazette* of July 13th, 1916, December 24th, 1918, and December 30th, 1918, and received the C.M.G. for service in the Dardanelles, and C.B. for the campaign in the Sinai Peninsula. In 1896 he married Ella, daughter of the late Major Watts, Bengal Horse Artillery, and had two sons.

Lieut.-Colonel Duncan Edward Curme, R.A.M.C. (ret.), died at Parkstone, Dorset, on July 30th, aged 63. He was born on January 9th, 1871, and was educated at Cambridge, where he graduated B.A. in 1892, and at King's College, London, and took the M.R.C.S., L.R.C.P.Lond. in 1898. Entering the R.A.M.C. as lieutenant on January 21st, 1899, he was promoted to lieutenant-colonel in the long war promotion list of March 1st, 1915, and retired on March 1st, 1919. He served in the South African War in 1899-1902, when he took part in operations in Natal, the Transvaal, the Orange Free State, and Cape Colony, including the action of Tugela Heights and the relief of Ladysmith, and received the Queen's medal with four clasps and the King's medal with two clasps.

Medical News

St. Thomas's Hospital Old Students' Dinner will be held at the Dorchester Hotel, Park Lane, W.1, on Friday, September 28th, at 7.45 p.m., with Dr. William Longworth Wainwright in the chair.

The annual dinner of past and present students of St. Mary's Hospital Medical School will be held in the library of the new medical school on Saturday, September 29th, at 7 for 7.30 p.m. The honorary secretary is Dr. A. Hope Gosse.

A post-graduate course, open to all medical practitioners without fee, will be held at St. Mary's Hospital Medical School, on Friday, Saturday, and Sunday, September 28th, 29th, and 30th.

The next lecture-demonstration arranged by the Fellowship of Medicine (1, Wimpole Street, W.) will be given by Dr. Clark-Kennedy, at 11, Chandos Street, W., on August 28th, at 2.30 p.m.; the subject will be loss of voice. The following lecture will be on September 4th, on pleural pain. There will be an afternoon course in infants' diseases at the Infants Hospital, Vincent Square, from September 3rd to 14th, which will include demonstrations, lectures, and work in the out-patient department. There will be a course in chest diseases for M.R.C.P. candidates at the Brompton Hospital, from September 10th to October 5th, the instruction consisting of clinical and *x*-ray demonstrations of cases and pathological demonstrations. A " refresher " course in medicine, surgery, and the specialties will be given at the Westminster Hospital, from September 17th to 29th. Other forthcoming courses include: diseases of the chest, at the Brompton Hospital, September 24th to 29th; proctology, at the Gordon Hospital, September 24th to 29th; demonstration of urological cases, at the National Temperance Hospital, on Saturday, September 8th, at 3 p.m.

The sixth Italian Congress of Anatomy will be held in Rome next October, under the presidency of Professor R. Versari. Further information can be obtained from the secretary, Professor V. Virno, Viale Regina Margherita 289, Rome.

In response to an invitation from the Royal Society the International Union of Pure and Applied Physics will meet in London during the first week of October. The meeting will take the form of a joint conference of the International Union and of the Physical Society, held under the presidencies of Professor Millikan and Lord Rayleigh.

Inspector Gabriel Sacquépée, formerly professor of hygiene at the Val de Grâce Military Hospital and inspector of the services of military hygiene and epidemiology, has been elected a member of the Académie de Médecine in the Section of Hygiene.

Dr. Gaston Ramon, member of the Académie de Médecine and assistant director of the Institut Pasteur, has been nominated a member of the Superior Council of Public Health of France, in succession to the late Professor Calmette.

Professor Dr. B. Spiethoff of Leipzig has succeeded Obermedizinalrat Professor Dr. J. H. Rille as editor of the *Dermatologische Wochenschrift*.

A bust of Georges Clemenceau has recently been unveiled by Dr. Dartigues, president of the Latin Medical Union at Goulet, in Vendée, the last home of the former French Prime Minister.

The University of Groningen has awarded the Guyot prize for the best work in otology during the last five years to Professor F. R. Nager, director of the oto-rhino-laryngological clinic at Zurich, and Professor Max Meyer of Würzburg.

At a recent reception in Berlin Professor Roffo, director of the Cancer Institute of Buenos Aires, was awarded the Red Cross medal of the first class, which is at present the highest German distinction.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBER** of the British Medical Association and the *British Medical Journal* is EUSTON 2111 (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Removal of Tattoo Marks

Dr. GEORGE STEANE (Erdington) writes: Is it possible to remove or obliterate tattoo marks?

Spontaneous Rupture of Extensor Tendons

Dr. GEORGE STEANE (Erdington) writes: Are there any cases on record of spontaneous rupture of the extensor tendons of the wrist and fingers?

Removal of Urine Stains from Clothing

"M.B." (Bath) is anxious to have the name of a chemical preparation which will remove urine stains from clothing, for use in a patient who suffers from incontinence. He would be glad if any reader could assist him.

Local Anaesthetic for Nasal Work

Colonel G. F. ROWCROFT (Coonoor, S. India) writes: With all the innumerable anaesthetics now being introduced, has nothing yet been discovered that will take the place of cocaine as a local anaesthetic for the mucous membrane of the nose by surface application, not injection? One occasionally comes across a patient who has a violent idiosyncrasy to cocaine, and nothing as an alternative appears to be available except a general anaesthetic, or some form of injection, often both undesirable, as, for example, such a simple procedure as passing a Eustachian catheter. One that would give analgesia sufficiently prolonged for a submucous resection would be ideal. Any enlightenment on this point will be thankfully received.

Head and Foot Presentation

Dr. ALASTAIR C. THOMSON (Kirton-in-Lindsey, Lincs) writes: On July 27th I was called by a district nurse to a woman in labour. She was a multipara, and had been losing liquor amnii for four days. The confinement had not been expected until mid-September. On pelvic examination I found a head presenting with, to one side of it, ten "digits," the whole being tightly wedged in the cervical canal. Under deep anaesthesia I was able to push back the head, when I found the "digits" to be toes in a very oedematous state. I performed a combined internal and external version, and delivered a 5¼-lb. male child (in the breech manner). Artificial respiration was required for a little time, but the child did very well later, and continues to thrive. The mother made an uninterrupted recovery. The child's legs at birth were easily put into the position of genu recurvatum—obviously due to its position *in utero*—but these now look almost normal. My textbook of obstetrics does not make any reference to this "feet and head" presentation, and I am wondering if any of your readers can tell me if this is a particularly unusual occurrence.

LETTERS, NOTES, ETC.

Holidays for Factory Girls

We have received the following letter signed on behalf of the Factory Girls' Holiday Fund by the Countess of Sandwich, Mrs. Louisa Creighton, the Very Rev. Dr. Hertz, Lady Margaret Loch, Sir Thomas Barlow, and Miss Lilian Braithwaite:

May we appeal to your kind readers for help for the Factory Girls' Country Holiday Fund, which is in urgent need of financial assistance. It may be questioned whether any of us ever outgrow a certain quickening of the pulse at the word "holiday"; it is a fact that the idea yearly increases its hold on our sense of what is due to us. Doctors recommend a holiday, kind friends urge it as a panacea for all the evil effects of overwork and fatigue; it is part of the routine of all our lives—but not, alas! of the lives that probably need it most. The girl who works all day in factory or shop, the woman who looks after her home and also cleans offices in the late evening and very early morning, have little money to pay for what to us is a necessity, but to them an unattainable luxury. When what they earn is wanted for family, rent, food, and clothing, in these days of unemployed men and boys, how can one individual, herself often the breadwinner who holds the house together, set aside even a few pence a week so as to go away and amuse herself alone? We deplore the scanty knowledge and appreciation that town and country people have of one another; what better way to cure this than the sending of town girls and women to welcoming country homes? Many of us have thankfully remembered all through our lives some kind hostess who invited us to stay, or some fairy godmother who paid for us to travel, the odious word "pauperizing" never being used in such a case. Why should not we who spend pounds on the vacations of ourselves and our families be allowed, and, indeed, urged, to spend shillings on the much-needed holidays of those who cannot pay for themselves? The summer months are hurrying by, and there is no time to lose. "Do it now!" On merely selfish grounds we would suggest that we should enjoy our own travels more this year if we preceded them by sending a donation to the wise, careful, old-established, and indefatigable Factory Girls' Country Holiday Fund. Subscriptions and donations will be thankfully received and acknowledged by the hon. treasurer, Mrs. Slater, or Miss Mary Canney, 75, Lamb's Conduit Street, London, W.C.1.

Disclaimer

Sir HAROLD GILLIES writes: In reference to an article in the *Evening Standard* of August 14th, in which my name is freely mentioned and an old photograph incorporated, I should like, through your columns, to reassure those members of the medical profession who are staunch defenders of its ethical position that not one single word on this or any other subject has been communicated to any representative of the *Evening Standard* by myself or either of my two secretaries. I wish to make it quite clear that this article and photograph were published without either my knowledge or consent.

Novocain and Cocaine

In a report of a recent inquest it was stated that novocain is a preparation of cocaine. The Saccharin Corporation, Ltd., the sole distributors of the former drug in this country, point out that it is not a preparation of cocaine, and that the latter does not enter in any form into the manufacture of novocain.

Section of Obstetrics and Gynaecology

Correction

Professor F. J. BROWNE (University College Hospital) writes: Will you please allow me to correct an error in the report (*Journal*, August 11th, p. 266) of my remarks in the course of the discussion in the Section of Obstetrics and Gynaecology on "Ovarian Conditions as a Cause of Pelvic Pain." I did not say that pain was a common symptom of ovarian tumours, but only of malignant tumours. It was with this statement that Professor Dougal expressed his disagreement (p. 267).

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 29, 30, 31, 32, 33, 36, 37, and 38 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *156*.